THE AMERICAN GAS LIGHT JOURNAL

PUBLISHING OFFICE No. 42 PINE STREET

DEVOTED TO THE INTERESTS OF ILLUMINATION HEATING, MECHANICAL, CHEMICAL AND GENERAL SCIENCE.

VOLUME LXXXIX., No. 13. Whole No. 1,738. | NEW YORK, MONDAY, SEPTEMBER 28, 1908. | $3 PER ANNUM, IN ADVANCE.

A. M. CALLENDER & CO., Proprietors. | THOMAS J. CUNNINGHAM, ELBERT P. CALLENDER. } Editors.

ENTERED AT THE POST OFFICE AT NEW YORK, N. Y., AS SECOND-CLASS MATTER.

CONTENTS.

An Asterisk (*) Denotes an Illustrated Article.

OFFICIAL NOTICES—

Third Annual Meeting, American Gas Institute 530

Change in Secretary, Indiana Gas Association 530

*Fourth Annual Meeting, Iowa District Gas Association—Concluded from page 357 529

Third Day, Morning Session—"Wrinkle" Budget for the Year—As to the Information Bureau—Subjects for General Discussion—Affiliation Representative—Response of Mr. Haines—Report of Committee on Final Resolutions—Adjourned.

*Method of Regulating Steam for Generator of Water Gas Apparatus, by Mr. R. V. Howes. 536

Address of the President (Mr. C. O. G. Mille·), Santa Cruz Convention Pacific Coast Gas Association. 537

The Humorous Side of a Gas Man's Life, by Mr. W. H. Foster 538

Purification Problems, by Mr. E. L. Hall. 539

Private Electric Plants in Central Station Territory 540

SPECIAL ENGLISH CORRESPONDENCE 541

The Gas Works Retort—Parliamentary Returns.

ITEMS OF INTEREST FROM VARIOUS LOCALITIES. 542

Annual Meeting, Worcester (Mass.) Company—No Change in Gas Rate, Seneca Falls, N. Y.—The Public Lighting Contract, Newark, N. J.—The Beaver Dam (Wis.) Plant in Forward State—Betterments at Chickasha, Indian Ter.—A Queer Presentment—Chicago Lighting Statistics—Public Lectures by Jacksonville Company—Betterments at Beatrice, Neb.—A Public Reception, Ludington, Mich.—Something from London, Ont.—And Other Items.

The Market for Gas Securities 544

[OFFICIAL NOTICE.]

Third Annual Meeting, American Gas Institute.

AMERICAN GAS INSTITUTE HEADQUARTERS,
25–29 WEST 39TH STREET,
NEW YORK CITY, October 1, 1908.

GENERAL ANNOUNCEMENT.

The third annual meeting of the American Gas Institute will be held at New York, N. Y., October 21st, 22d and 23d, 1908. The meeting will be called to order by the President, Alex. C. Humphreys, of New York, at 10 A.M., Wednesday, October 21st.

Meeting Hall and Headquarters.—The business sessions will be held in the Auditorium of the United Engineering Societies' Building, 29 West 39th street, between Fifth and Sixth avenues. The Auditorium is on the third floor of the building, and on the eighth floor are located the permanent headquarters of the Institute. On the days of meeting the Secretary and Treasurer's office at headquarters will be open from 9 A.M. to 6 P.M. When the Institute is not in session the President and officers will make their headquarters at the Hotel Astor, Times Square (Broadway and 44th street).

Members are particularly urged to write for their rooms at once and, in doing so, a reply should be requested, for which a self-addressed, stamped envelope should be inclosed, as misunderstandings may thereby be averted. The securing of rooms well in advance is important, as the hotels are liable to be well filled at this time of the year.

The banquet will be served at the Hotel Astor, Thursday evening, October 22d.

Roll Call.—The roll call will be made by means of the door card system. Each member upon entering the hall for the first time will, at the door, receive a special card upon which he will find his name, address, etc., as these appear in the Secretary's books, and such card should be corrected and returned to those in charge. Members should attend to this very carefully, as these cards are used immediately after the meeting for correcting the annual membership list. Visitors will please hand to the doorkeeper their personal cards.

The following list of hotels with rates is submitted:

Hotel.	Location.	Single Room. Without Bath.	Single Room. With Bath.	Double Room. Without Bath.	Double Room. With Bath.
Breslin	B'way, cor. 29th st....	$1.50	$2.50	$3.00	$4.00 up.
Gilsey.....	" " "	1.50	2.50	2.50	3.50 "
Imperial	" and 32d st	2.00	2.50	4.00	5.00 "
Martinique	" " 33d st....	2.00	2.50	3.50	3.50 "
Herald Square.	" " 34th st....	1.50	2.00	2.50	3.00 "
Marlborough ..	" 36th and 37th st.	1.50	2.50	2.50	3.00 "
Knickerbocker.	" at 42d st	2.00	3.00	....	5.00 "
Astor.....	Times Square..... ..	2.50	3.50	3.50	4.50 "
Manhattan.....	42d st. & Madison ave.	2.00	3.00	4.00	5.00 "
Belmont. ..	" " " Park ave.	2.50	3.50	4.00	5.00 "
Grand Union..	" " " " ..	1.00	2.50	2.00	3.50 "
Holland... ..	5th ave. and 30th st ...	2.00	3.50	3.00	4.50 "
Waldorf.	" " " 34th st...	3.00	4.00	5.00	6.00 "
Savoy.....	" " 58th & 59th st..	2.50	3.00	3.50	4.50 "
Netherlands ..	" " and 59th st ..	2.00	3.00	....	5,00 "

The above prices are all minimum rates for one person in a room, European plan. Rates for two persons in one room may be obtained by communicating with whichever hotel may be selected.

Badges.—All members attending the meeting are particularly requested to bring their membership badges, as the Committee of Arrangements is preparing an identification badge for each member which will require the regular membership badge for its proper completion.

LIST OF PAPERS AND REPORTS.

The papers and reports to be read at the meeting are as follows:

List of Papers.

"High Pressure Distribution;" by Mr. Jacob D. von Maur, St. Louis, Mo.

"Benzol Enrichment;" by Mr. E. H. Earnshaw, Newark, N. J.

"Some Further Remarks on the Photometry of Gas;" by Mr. Chas. O. Bond, Philadelphia.

"Physical Theory of Coal Carbonization;" by Mr. W. H. Fulweiler, Philadelphia.

"Vertical Retorts;" by Mr. J. H. Taussig, Philadelphia.

"Relative Merits of Wrought Iron and Steel Pipe;" by Mr. Frank N. Speller, Pittsburgh.

"Report of Progress on 'A' Meters;" by Mr. W. J. Serrill, Phila.

"Report of Progress on Dipping Meters;" by Mr. W. A. Castor, Philadelphia.

"Holder Cups and Tank Heating;" by Mr. C. J. Ramsburg, Phila.

"Better Gas Illumination;" by Mr. Thomas J. Litle, Jr., Gloucester, N. J.

General Reports.

Report of the Public Relations Committee; Mr. E. G. Cowdery, Chicago, Chairman.

Report of Technical Committee; Mr. W. H. Gartley, Philadelphia, Chairman.

Report of Board of Revision of the Question Box on the Manufacture of Gas; Mr. J. D. Shattuck, Chester, Chairman.

Wrinkles; Mr. M. R. Bump, Editor, New York.

Accidents; Details by Members.

Special Reports of the Sub-Committees of the Technical Committee.

Report of Committee on Calorimetry, Mr. R. B. Brown, Milwaukee, Chairman.

Report of Committee on Uniform System of Accounting, Mr. R. A. Carter, New York, Chairman.

LIBRARY OF CONGRESS SEP 28 1908 SMITHSONIAN OFFICE

Report of Committee on Pipe Standards, Mr. A. S. Miller, Baltimore, Chairman.

Report of Committee on Electrolysis, Mr. A. G. Glasgow, London, Chairman.

Report of Committee on Unit of Light, Mr. W. H. Gartley, Philadelphia, Chairman.

Report of Bureau of Information, Mr. W. A. Baehr, St. Louis, Chairman.

Report of Proceedings of International Committee for Standardization of Threads for Gas Appliances, Mr. A. G. Glasgow, London, Delegate.

Announcement.—Sight-seeing Trip to Consolidated Gas Company's Plant, by Mr. W. C. Morris, New York.

Note.—In order that the Proceedings containing the report of this meeting may be published and issued to the members immediately after the meeting, notice is hereby given that if any of the speakers at this meeting desire to correct their remarks before they are printed, they will be given an opportunity before leaving New York. The stenographer will have typewritten copy of the principal discussions prepared at the headquarters between the sessions of the meeting, and all those who desire to correct their remarks must notify the Secretary at the close of the session at which such remarks are made, as all reports will be turned in to the Publication Committee and thence to the printer immediately after the adjournment of the meeting.

Entertainment and Hours of Meeting.

Wednesday, October 21.—The business sessions will be from 10 A.M. to 12:30 P.M., and from 2 P.M. to 5 P.M. The evening will be at the disposal of the members, no entertainment having been arranged for Wednesday.

Thursday, October 22.—Business session from 10 A.M. to 2 P.M. Remainder of afternoon at the disposal of members. Tickets of admission will be given to those who desire to visit the gas and electric stations in and around the city. The banquet for members and guests will be held at the Hotel Astor at 7 P.M. This hotel is noted for its excellent service, and it is the desire and expectation of the Committee to make this a most attractive feature, both as regards the quality of the dinner and the speaking afterward. Arrangements have been made for the ladies to attend the performance at the Hippodrome on Thursday evening, this entertainment being both unusual and interesting, in fact, the only one of its kind.

Friday, October 23.—Business session from 10 A.M. to 12:30 P.M. After adjournment members are invited to inspect the plant of the Astoria Light, Heat and Power Company. Luncheon will be served on the steamer while making the trip from Manhattan to Astoria. The return trip will be made in time for members to dine at their respective hotels. On this afternoon there will be an automobile trip around New York for the ladies, giving them an opportunity to see many points of interest. Friday evening will be at the disposal of the members.

Saturday, October 24.—The Committee has arranged an excursion to West Point for members and ladies. In addition to the other interesting features at West Point, there will be a dress parade of the cadets. Returning, the steamer will reach New York in time for dinner, enabling members to catch evening trains for home, if so desired.

Tickets for Entertainment.—Tickets for the banquet only will be $5 each. Tickets for banquet and West Point excursion will be $10 each. This ($10) charge will also include the entertainment of one lady at the Hippodrome, on the automobile trip and on the West Point excursion. For any additional ladies, a further charge may be expected.

Special Notes.

Please fill out the inclosed stamped and addressed postal card and mail *at once*. This will materially aid the Committee of Arrangements and prompt replies will be much appreciated.

Be sure to obtain a railroad certificate when buying your ticket to New York. The greater the number of certificates handed in, the easier it is to obtain the reduction in rates for future meetings, since the railroad officials count the certificates turned in as marking the full attendance. Apply for ticket and certificate at least 30 minutes before train time. Each person must sign his own certificate at time of purchasing tickets to New York. Members will please hand the Assistant Secretary their certificates, accompanied by 25 cents for each one, upon arrival at Headquarters. If there are 100 members present holding certificates, each certificate will then be promptly indorsed and held at the Institute Headquarters where members should call for them. Apply for return tickets at least 30 minutes before train time and have your certificates with you. All persons, ladies included, attending the meeting are entitled to the reduced rate from the territories named. Keep this circular in your pocket and apply to it if in doubt. Alex. C. Humphreys, President.

[Official Notice.]

Change in Secretary, Indiana Gas Association.

Indiana Gas Association, Office of the Secretary,
Indianapolis, Ind., September 21, 1908.

To the Members, Indiana Gas Association: Mr. Frank H. Lane having resigned the office of Secretary-Treasurer of the Indiana Gas Association, owing to his having accepted other duties, necessitating his absence from the State, Mr. Philmer Eves, Sales Agent of the Indianapolis Gas Company, was elected at a meeting of the Board of Directors, held Sept. 11, to fill the vacancy. Philmer Eves.

[Concluded from Page 357.]

FOURTH ANNUAL MEETING, IOWA DISTRICT GAS ASSOCIATION.

Held at Omaha, Neb., June 17, 18 and 19, 1908.

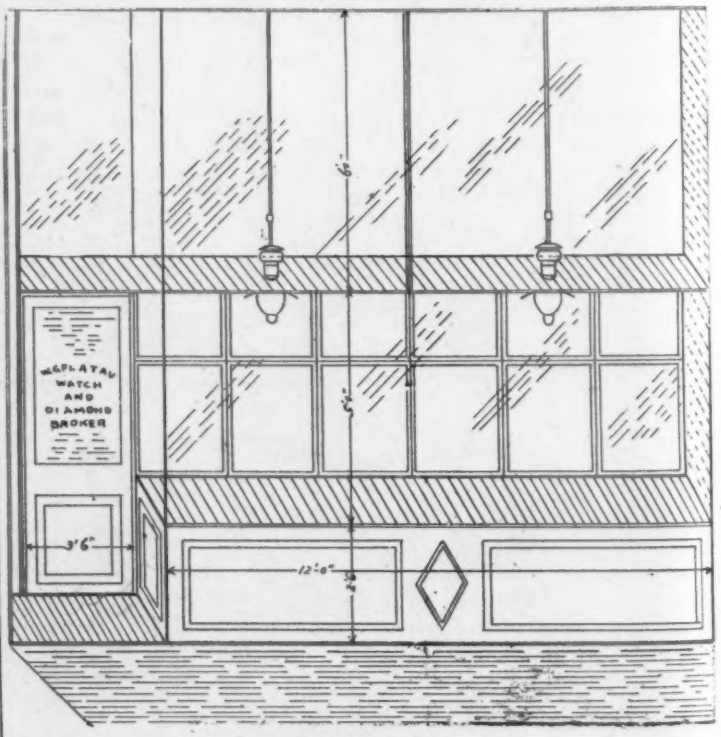
Third Day—Morning Session.

The President having called the convention to order, the Secretary here took opportunity to respond fittingly to the action of the Association respecting the duties of his office, that had been taken the previous day. His speech in part was: * * * I do not want you to think that I do not fully appreciate your action of yesterday, simply because I did not then fittingly acknowledge it. The action came without warning, and so spontaneously, that I was completely floored for a time, or until other business was under consideration. I certainly did and do appreciate the action and the motives which prompted it. * * * In fact I can hardly tell you how much I do appreciate it. I trust that next year will be fully up to the growth record of the Association, and that we will have at least 100 members. [Applause.]

The President then called for the "Wrinkles" that had been compiled under the direction of the Editor (Mr. H. D. Mitchell, of St. Charles, Mo.). In the unavoidable absence of Editor Mitchell, the Wrinkles were read by the Secretary.

Wrinkle Budget for the Year, as Prepared by the Editor, Mr. H. D. Mitchell.

Wrinkle No. 1.—*Installation of Gas Arcs in Dust-Proof Jewelers' Window.*—Seeking a way to overcome the objections of jewelers to the use of gas for illuminating tight or dust-proof windows, who claim that the heat and products of combustion tarnish quickly whatever jewelry is on display. The accompanying sketch shows one of

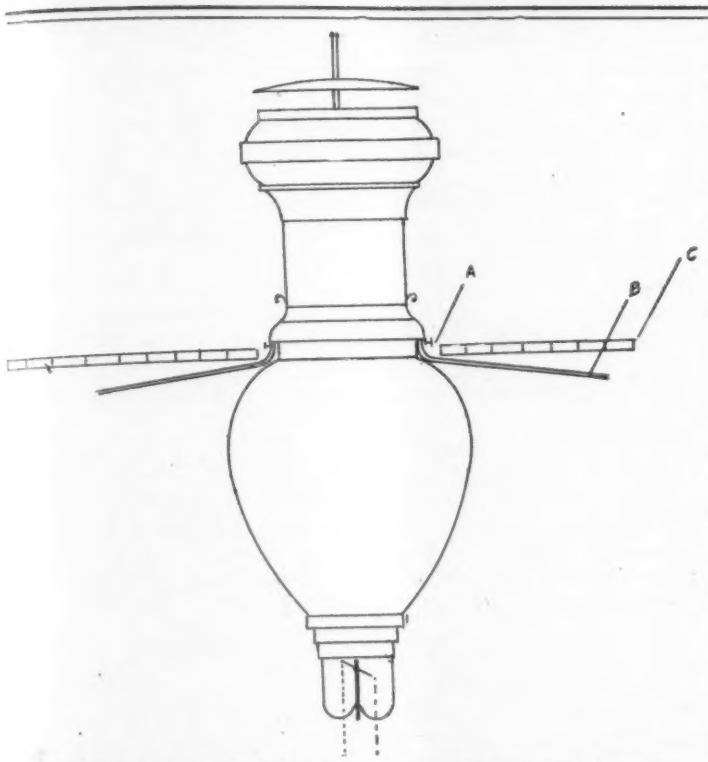


Wrinkle No. 1.

the many successful installations that have been made, and this particular one, on account of the limited space inside and two arcs being employed, is a very severe case. Included with this sketch is a letter from a consumer expressing his satisfaction at results obtained.

The inside measurements of this window are: 12 feet wide at rear; 11 feet wide at front; 5 feet high, and 2 feet 7 inches deep. The space between top of show window and ceiling of store is 6 feet.

Two holes, 8 inches in diameter, were cut through the top of this show window at a point equidistant from side to side, dividing space evenly and exactly in the center from front to back. The stems of lamps were so cut that when arc lamps are attached the crown of the shade is on a level with the top of show window, allowing globe, shade and burners to extend down into window and stack and upper portion of lamp above. In this installation nothing was done to protect wood from catching fire or charring, as the portion of the lamp that would touch the wood, if lamp were struck so it would swing



Wrinkle No. 1.—*A.*—Opening between crown of shade and ceiling of window. *B.*—17-inch flat shade. *C.*—⅛-inch dressed and matched ceiling.

against ceiling of window, would be the crown of shade and no possibility of either occurring.—E. H. MARTIN, Omaha (Neb.) Gas Company.

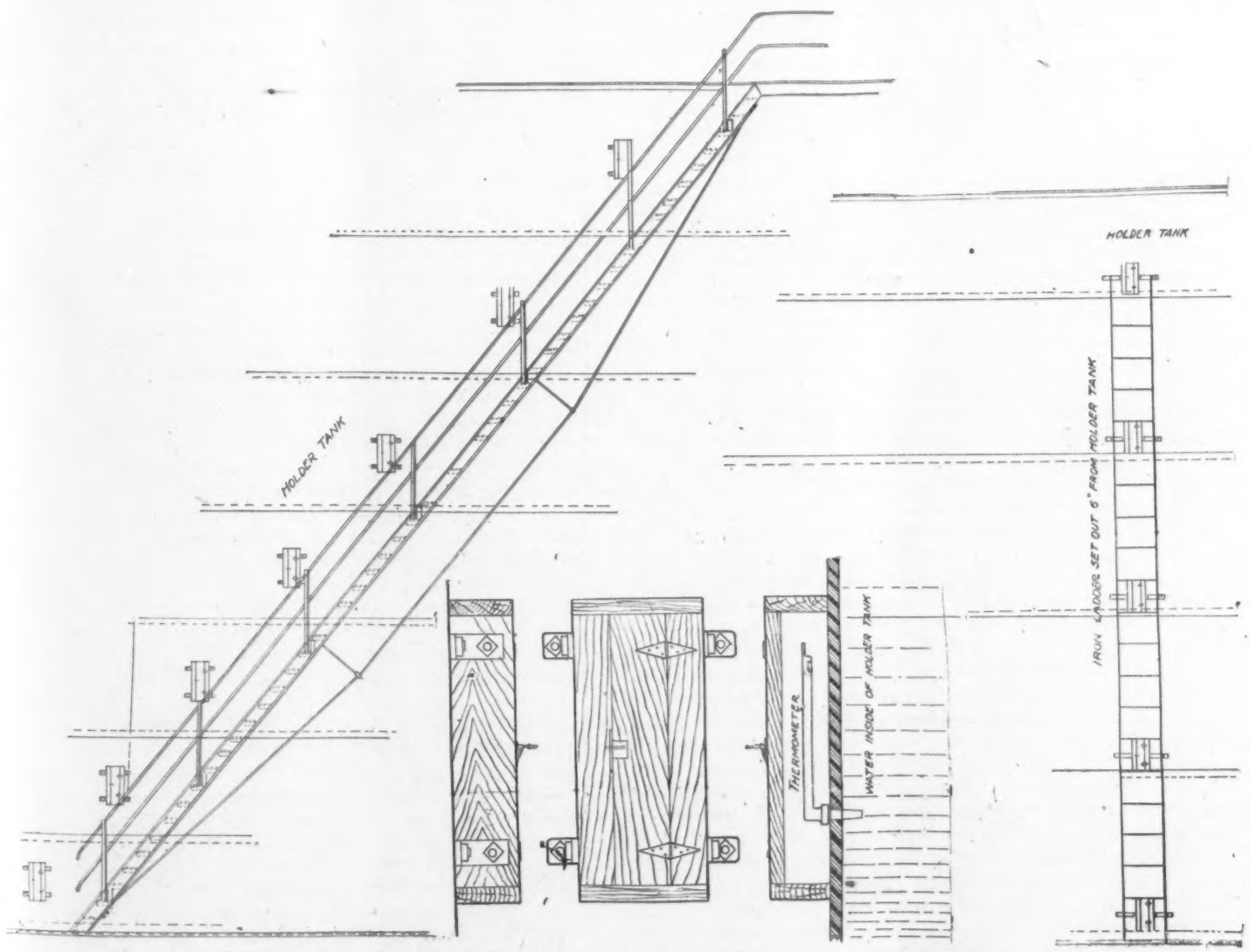
Wrinkle No. 2.—"To get a crowd to attend cooking school in small town where there are no street cars is a problem which some of us have been up against. In St. Charles, Mo., last year we gave free hack service on the first day of each week during our cooking school, having the route advertised in the papers, signs being put up at different corners stating at what time the hack would start from there. We found a crowd at these places when the hack arrived, and as the weather was warm the ladies were highly pleased at being able to attend the school without walking."—H. R. MITCHELL, St. Charles, Mo.

Wrinkle No. 3.—*Decarbonizing Retorts.*—"Using a small fuse blower belted to a ¼-horse power electric motor, using the air conducted to the retort through a 3-inch galvanized iron pipe and attached to the end of a 3-inch cast iron pipe laid in the retort about half way back. By making the mouth of the retort nearly full the air from the blower will burn out the carbon in from 6 to 8 hours without any damage, which is often caused where a steam jet is used for cleaning. By moving the point of the pipe in the retort from one side to the other it cleans it perfectly."—GEO. S. CARSON, Iowa City, Ia.

Wrinkle No. 4.—The Editor begs to submit this communication in regard to use of lead wool instead of lead. I give no prices, but these can be obtained from the different houses supplying lead wool, as prices would make this seem an advertising scheme.

Size of joint, inches.....	3	4	6	10	12	16	20	24	30	36
Pounds of cast lead used..	5	6	9	17	20	30	40	65	90	103
Pounds of lead wool used. .	.	.	6	12	14	20	28	40	65	65

Wrinkle No. 5.—"I take pleasure in submitting as a 'Wrinkle' the accompanying, the originality for which I cannot vouch, further than that the writer had never heard of the idea. As in our own case there may be small growing plants, the managers of which fully recognize the invaluability of an individual meter record, but that, when the initial step is taken, find it rather expensive to bring into the shop 1,000 or 2,000, or more meters, as the case may be, for the soldering on of the company number badge. In our case we felt that the 'game was scarce worth the candle,' and, casting about for some means for attaching this plate without bringing each and every



Wrinkle No. 7.—Method of Determining Temperature of Water in Steel Holder Tanks at Different Levels.

meter into the shop, hit upon the idea of having the brass badges punched with a small hole in either end, through which is run a fine wire, about 20 gauge, which, cut just the proper length, can be carried in a bundle of 200 or 300 by a man accompanying the meter reader, and who can place in position, very securely, by passing around and twisting as tightly as possible, behind the meter, and taking care to have the badge just above the swell of the meter case, then tightening the wire by pressing same firmly around the inlet and outlet. This is done while the index taker is reading his meter and compiling the other data of his record on a suitable form. When the meter is then returned to the shop for any reason, the wire may be removed and its number soldered on in more permanent shape, if so desired. We have found this very satisfactory and consider it much cheaper than either bringing the meter to the shop or carrying a soldering outfit to each house, especially where quite a large number of meters must be numbered."—A. W. BORDEN, Hastings, Neb.

Wrinkle No. 6.—Square Heads for Cotter Bar Screws.—"Cotter bar screws, for holding manhole covers in place on water gas apparatus and similar machines, are usually made with tee handles. Where the screws are used at frequent intervals, as on the cleaning doors of a generator, the breaking of the tee handle is of rather frequent occurrence. This can be obviated by doing away with the tee handle, making the screws with a square head and using a crank or a double-handle wrench with which to tighten the screws. With a large wrench the screws can be set up tighter, and there is no object in striking the screw with a hammer as when the tee heads are used. The square head screws cost a trifle less than the tee head."—G. I. VINCENT, Des Moines, Ia.

Wrinkle No. 7.—Temperature of Water in Steel Tanks.—"I herewith hand you sketch of a Wrinkle, showing method of determining the temperature of the water at different depths in steel holder tanks. This method, which has been used in Omaha since 1904, has proven very satisfactory. It is very important to know the temperature of the water in steel holder tanks in cold climates, especially relief holder tanks, where an emulsion is formed that will not circulate with either the water or the tar, and will even freeze when the surface of the water may be warm."—G. H. WARING, Omaha, Neb.

AS TO THE INFORMATION BUREAU.

Mr. Waring—Along this line, but not in direct connection with this subject, I would say, as a member of the Bureau of Information of the American Gas Institute, that we would like the Iowa District Gas Association to send in questions. Mr. W. H. Gartley is Chairman of the Executive Committee, and there are 12 men on the Bureau of Information selected from different sections of the country. This matter has not received the attention I think it should by the gas men of the country, and the Bureau would be very glad to have the co-operation of individuals as well as Associations in this work. The working of the Bureau is this: A question is sent to the Chairman, Mr. Baehr, of St. Louis, who assigns it to one of the 12 members for answer. This man takes all the time he wants to answer it, and consults all of the authorities and gas men that he thinks can assist him. In addition answers-at-large are requested from the gas fraternity. The individual member selected by the Chairman prepares his answer and returns a copy of it to the Chairman, and also a copy to the other 10 members of the Bureau, whereupon each one of the others sends his criticisms to the Chairman and the latter compiles the Bureau's answer to the question. So you see it represents practically the work of 12 men. There were originally 8 members, and Mr. Lea and myself were added to the list. I think the membership of the Iowa District Gas Association should take part in this.

Mr. Vincent—Does Mr. Waring think it necessary to be a member of the Institute to take advantage of this Bureau of Information?

Mr. Waring—Questions will be answered by the Bureau, provided the questions can be considered. If not, the person asking the question will be so told. The idea is to get up a scheme that will prove more consistent than that of the Ohio Gas Association. With the latter anybody answered the questions, and in many cases the answers were contradictory. Questions are requested from any gas man, regardless of the Association to which he belongs. I brought the matter up to you because I want the members to be so thoroughly posted that they will take an interest in it. I think it is a very valuable plan. When a technical question is asked the answer will have the stamp of approval of the American Gas Institute, and will stand until contradicted by the Institute in its body.

Mr. Roper—Will the names of the persons asking and answering the questions be published?

Mr. Waring—Neither the name of the person asking the question nor that of the member of the Bureau answering it will be published, but if the answer of a person not on the Bureau is published, the name will be given, unless a request is made not to do so.

Mr. Roper—In all cases the answers are edited by the Bureau?

Mr. Waring—Yes; they should be sent to Mr. Baehr at St. Louis.

Mr. Roper—Should be or must be?

Mr. Waring—I can't say it is compulsory. One can publish his answer in any JOURNAL he selects, but it can't be published under the name of the Bureau of Information unless sent to Editor Baehr.

Mr. Roper—It would not be published in the "Proceedings" unless it had been edited by the committee? Is that the way we are to understand it?

Mr. Waring—I will read the ruling on that: "Anyone in the gas fraternity has the privilege of sending questions to the Bureau to be published in the JOURNALS, as well as the privilege of answering questions that appear in the JOURNALS. All answers sent in from the fraternity at large are to be published over the name of the one who answers them. If any of these answers seems particularly good, it will simply be stated that the Bureau approves of the answer of Mr. * * *, and this answer will be considered as the answer of the Bureau. The Bureau will prepare an answer to each question. Each question is to be sent to the Chairman, and upon its receipt he will assign it to some one member of the Bureau well fitted to answer it, and also send it to the JOURNALS for publication. It will be the duty of this member to prepare an answer to the question and to send his answer to all the other members of the Bureau, including the Chairman. Each of the other members is to comment on the answer and send his comments to the Chairman. It then becomes the Chairman's duty to prepare the official answer from this answer and the comments. There are now 12 members, and it shall be our endeavor to so distribute the questions among them that no one will be overburdened." This is signed by Mr. W. A. Baehr, Chairman of the Bureau of Information.

Mr. Taylor—I would like to call attention to the Wrinkle by Mr. Waring, as to putting a thermometer in the side of a steel holder tank. Last winter we found that, owing to tar in the holder, an emulsion was formed in a zone, and there was danger of freezing. We had plenty of steam on the holder, and it was warm except at this one point. It is the duty of the night man at the works to record these temperatures every night, and he saw that this one particular point—evidently the zone of the tar and water emulsion—was likely to freeze. So all we had to do was to change the steam pipe a little, and in 24 hours that part was heated uniformly with the remainder of the tank.

Mr. Waring—In 1904 our relief holder was wrecked by ice forming in this zone of emulsion of tar, lampblack and water that would not circulate. The surface of the water was thoroughly warm, and the ice formed when the holder was down. When the holder went up it caught, and the ice was formed 15 feet below the surface. So those who store tar in their relief holder in a steel tank might better take some precaution to avoid a similar accident. There is no danger, of course, in a masonry tank holder.

The President—If there is to be no further discussion on this Wrinkle budget, Mr. Vincent will close the discussion.

Mr. Vincent—I think Mr. Mitchell was most careful in his preparation of the budget, and that some good things are in it. It also seems particularly unfortunate that it did not evoke a lengthier discussion. I would like to open up a subject just for a moment that was under discussion yesterday and try to refute, if possible, a statement made on the floor that I think the gentleman would not make again. Sixty-six per cent. of the works represented in the Iowa District Gas Association are very small plants, and it seems very unfair to the man who is operating one and trying to make his living (as many are) to be told it is a losing proposition. If we did not believe in the small plant we would never have had the Iowa District Gas Association. For my part, and I think it is also the sense of the Association, it seems a pity to have go on our records, for a man who is operating a small plant, to read that a gentleman with the national reputation that my colleague has should have stated on the floor of this convention "Don't." I think this applies both to the men that are operating and to those who are contemplating building. Personally I would deeply deplore that the men operating small plants should leave this convention with that opinion.

Mr. Tenney—A word on the subject of this operation of the smaller

gas works. While my experience is limited to practically none at all in the operation of larger works, I have a good many friends among those who are operating plants in towns or cities of 2,500 to 5,000 people, and I am quite confident that, with good installations of water gas, some of the smaller towns of 5,000 are paying better interest on their investment than the larger ones, and I think in many instances they are freer from labor and political agitations, and the owners of those plants have a safer investment and less to contend with for the dollars invested than the men of the larger plants. I am very glad this subject has been reopened.

Mr. Taylor—The matter was brought out in discussion yesterday that efficiencies do not count in a small plant, but I believe they do. If a man is a gas maker and manager all-in-one, I believe it will pay him to try to make the best gas he can at the least expenditure for materials. I know it won't pay him to expend money for an elaborate equipment to determine these results, but at the same time I believe it does pay to try to get the best efficiency out of any apparatus you are running. A saving of 2 or 3 cents to the 1,000 represents a small amount in a small plant, but the percentage obtained is just as good as in a large one.

Mr. Heaton—Mr. Waring's remarks had a very discouraging effect on me, and also did those of Mr. Forrest, as I am starting new in the business. I made it a point to have a conversation with Mr. Forrest afterwards to ask him to what class of plants he intended his remarks to apply, and the source of his authority. He stated that while he neglected to make that plain, they applied almost exclusively to gasoline plants, which I believe it is now recognized, on account of the advance price of gasoline in the last few years, cannot be run profitably. He said that in a measure they would apply to many of the old coal plants, which he said were not properly installed originally, and at a very excessive price; also, the price of oil had advanced so that it was scarcely profitable to conduct that style of plant, and that he had no intention whatever of having his remarks applied to the more generally recognized gas plants, such as coal gas and water gas. Further, that in his opinion it would be due to bad management if such plants could not be made profitable, even in small towns.

The President - I think a careful reading of Mr. Forrest's paper shows that the great number of small plants to which he refers particularly are gasoline plants and small oil processes, which, as you say, are becoming unprofitable on account of the advance of the high-grade materials they have to use. His paper also brings out the point that the system of accounting explained is designed for plants of probably 300 to 500 meters. A great many of the smaller towns through the West have gas works that are practically nothing but an enlargement of a private gasoline plant, which may supply only from 5 to 50 meters, which plants are undoubtedly unprofitable. It is hardly likely they would require a very elaborate system of bookkeeping, if managed by simply one man, who keeps the cash in his pocket and his books on scraps of paper. I think the plants to which he refers particularly as not being profitable are those run on a hit-or-miss plan.

Mr. Green—For over 2 years I have been mixed up with a crude oil plant. My connection with it has been something in the nature of holding onto an electric battery, with the bell ringing all the time. I have tried to let go; but couldn't. I recently installed a water gas apparatus, and while I can't say just what the results will be, they are very gratifying thus far, and I know that, with proper management and attention to details, it can be made a big success. But the dollars and cents must be looked after very minutely, the business has to be hustled and one has to be pounding all the time. We have a possibility of probably 600 meters in our town. They haven't come to us in the past, and for the last 2 months we have been pounding away and have secured a third more than we did in the 2 years previous. I know that small plants can be made a success, just from what I have seen this one do.

Upon motion a vote of thanks was extended to Mr. Mitchell.

The President—We will proceed to the next listing on the programme which is

SUBJECTS FOR GENERAL DISCUSSION.

The first topic mentioned is new business. This covers a very wide ground, and we would like very much to hear a general discussion. The methods of obtaining new business vary very largely in different sized towns, and the value of new business obtained depends very much on the character of the town. This brings up the question of whether it is wise to take on new business which requires what might be called an improper method of construction. Just as a suggestion, I would mention the putting of meters all over a flathouse or business block instead of in the cellar, and connecting them up so as to avoid danger from fire and asphyxiation. Some gas companies in their efforts to secure new business will allow poor construction in order to get the gross income. A great many subjects of that kind can very profitably be discussed. We will be very glad to hear from any of the members present.

Mr. Stewart—New business to me is the most important department of the gas company; it is the lifeblood, so-to-speak. Tell me of your new business department and the manner in which it is conducted and I will tell you what success you are having in the gas business. You may be making money for your company without a properly organized new business department, but with a well organized new business department your earning capacity would be largely increased. Nothing in nature stands still; it either continues to grow or it declines and begins to die. There is no such thing as standing still in this busy, bustling world of ours. New business might be classified into three kinds: To the first class would belong business secured for houses with services and meters in. To the second class would belong business secured for houses on mains with no service. To the third class would belong business secured where both mains and services are required. The first step necessary in the organization of a new business department is a complete and accurate record of every house on the mains, name of every consumer, purpose for which gas is used, the number and kind of appliances now installed; also, the name of every family and the condition of the houses, whether service is in or not. January and February are good months to get this information. Separate them into three classes, being sure to keep the record up each day; then you are ready for new business. If your city is large enough to afford work for two or more solicitors, it is necessary to have a superintendent or sales' manager of the department. If only one solicitor is employed, he should have charge of the department and be given to understand it is up-to-him to make the department a success, and also that he would be given credit for the success of the department. To secure business for the first class: This may be done in various ways. To me, a personal call at the house by the solicitor to form a personal acquaintanoe with the consumer to such an extent that the consumer will have confidence in whatever statement he might make. In this manner you often find out the little grievances that might exist between the consumer and the company, or some of the consumer's friends that may have a real or an imaginary grievance. Let me here tell you of a case that happened only last week in our city. While visiting the consumers on one of our suburban streets I was informed by two different families that a lady in the neighborhood had overpaid the company $3 on a gas range she had purchased. I at once called upon the lady in question with an explanation why I had called and a statement that if she would be kind enough to get me her receipts and permit me to check them up I would be glad to return to her the $3 she had overpaid the company. I checked them over and found a receipt for $1 for a Welsbach lamp and a receipt for $2 for stove connection. This was the $3 that she was under the impression she had overpaid the company. It has been my experience that a great many people, on first installing a gas range, only use it for light work, such as getting breakfast, making a cup of coffee for lunch, etc. They often use their coal stove for baking, roasting or getting the heavy meal of the day. The solicitor often finds this condition to exist in the home. The proper kind of an argument, such as the cost of coal or wood to do a baking or cooking a meal, and comparing it with the actual cost of gas to do the same work, will often increase the consumer's bill from 50 to 100 per cent. and still have a satisfied consumer. Another place where a good solicitor does good work with the cousnmer that is dissatisfied with the use of gas, for no better reason than he has been led to believe that the gas company is dishonest, and I, for one, do not wonder at the public having this opinion, if you will only stop to think that a gas company has the only method of measuring the quantity of gas used. How many of us are there who would receive change for a $5 bill from one another without counting it? And still I have heard of gas company employees losing their tempers and being very much provoked because some consumer has dared to question the accuracy of their gas bills. A little diplomacy on the part of the solicitor, with a full explanation of how the accounts of the company are kept, and above all, try to inject into this consumer the importance of reading the meter once a week, if he will; if not, to be sure to read the meter after the regular reading has been made by the company. I often use an argument similar to this when talking to a customer of this kind: "You are willing to concede that, if the company is dishonest, the

solicitor knows it, and the man who reads the meter knows it also and is a party to the fraud." This point conceded, I then say to them: "Don't you know that it is a fact that the men who read the meters as well as other employees are often discharged from the company? Don't you know if any of the employees of the company were in possession of facts showing that the company was skinning the public, they would not dare discharge them, as it would only be necessary to let these facts get into the newspapers of the town and it would then be a case of God help the company, for they could not expect help from any other source." I know of a case where a solicitor called on the general manager of a manufacturing concern with the knowledge that there was little chance of an increase in business. The call was made with the introductory remarks that he had called with the purpose of finding if the business relations and the service of the company were entirely satisfactory. The solicitor was treated with unusual courtesy, was introduced to the several employees in the office, was handed a good cigar by the manager, who made this statement that he had been in business many years but had never had a representative of the gas company call on him before unless he had a bill to collect or in reply to some complaint that had been made. The solicitor was taken through the plant by one of the clerks and found, to his surprise, an opportunity to increase the consumption of gas by having a special furnace made to heat a certain kind of soldering iron which consumed from 6,000 to 7,000 feet of gas each month. The chances are this solicitor would never have gotten into this plant at all if he had introduced himself in any other way. Should a solicitor have a key to prepay meters? I believe he should for several reasons. First, he is at a house, possibly at the farthest point from the office, when a consumer complained about the gas bill. If he has no key what can he say? About all he has to say is: "Well, I'll send the complaint man to check up the meter. You can call at the office later and we will let you know the results." On the other hand, if he has a key, he gets the last reading of the meter by 'phoning the office, then invites the consumer to go down into the basement with him and read the meter. Before unlocking the money box he figures out the amount of money that should be in the box and says, "Now, if the meter is right, there should be so many quarters in it." He shows the consumer how to figure it and then opens the money box. I have never seen it fail to satisfy a consumer, and, in addition to this, it saves a great deal of time for some other employees, who would not, and very likely could not, perform the work as well. To secure business for the second class: In soliciting for entirely new business a consumer often comes in contact with a prospective consumer who will not buy a gas range because Mrs. Smith says gas is very expensive, or that her bills are from $5 to $6 per month. In reply to a prospective consumer of this kind I use an argument similar to this: A gas company has several classes of people to do business with, and you cannot estimate the amount of your gas bill by what Mrs. Jones' bill is for some of the following reasons: First, some people like to tell their friends and neighbors how big their bills are, because they want to impress them with the fact that they are able to pay such bills and that they have plenty of money, etc. Another class is the one that tells you its bills are large because, being of a jealous disposition, it does not want you to have the same conveniences in your house that she has in hers. Still another class is the one that tells you how small the bill is, to impress you with the knowledge of how economical one is in the management of the household. I would offer a further explanation by the statement of the fact that it is possible, and often is the case, that one consumer's bill will be half the amount of another's for the same amount of work, caused by allowing gas to be turned on only sufficient to keep the pot boiling and no waste in heat. A canvass made along this line will often produce the desired results. A solicitor must never make a misstatement, for nothing else that he can do will injure himself or his company more quickly. In case a solicitor makes a mistake, agreeing to do certain things which possibly are against the rules of the company, he should take this matter up at once with his direct superior, and it should be handled in such a manner that the consumer will have no cause to complain. What priced gas ranges should be handled by the gas company? It seems to me the company should handle gas ranges to suit the various classes they expect to sell to. The policy heretofore seems to have been that almost all companies expect to sell the laboring man who gets $1.50 per day, and supports a family, about the same priced gas range and on the same terms as the clerk who is getting $100 a month. Does this plan correspond with other mercantile propositions? It certainly does not correspond with the shoe merchant, drygoods man, grocer or butcher, who supplies the class of trade that we are attempting to do business with. I realize that the complaint department and the appliance department in most cases get up on top of their desks and yell "Expense of maintenance, dissatisfied customers;" but, just stop a minute. Is it not possible to make a gas range with a few less trimmings and fancy stunts—a poor man's stove—with a 12-inch or 14-inch oven, 3 or 4 burners, that could be sold for $6, $7 or $8, and that could be paid for at 50 cents or 75 cents a month? Don't you believe if this policy were put in force that we could be selling almost every family gas and make a fair profit? Why are not our poorest families using gas? They are almost without exception using gasoline. It is one of two questions: Either the cost of the stove or the cost of the connections; it is not on account of the cost of the fuel—gas. The early part of the year our company bought a carload of single oven stoves and sold them for $9.50, $1 down and $1 per month, inside of 6 weeks. To secure business of the third class: Our policy has been to make a canvass of every house on the proposed main extension, to tabulate each name on a separate card, whether the occupant of the house is the owner or tenant, with all necessary information, such as, if they agree to use gas, if they will think about it, etc. After this canvass is complete we go over our cards and estimate the actual number of consumers we must have before we will make the extension. We also estimate the number of consumers it is possible for us to get by trying all the means at our command to induce them to use gas. We then start getting the *bona fide* orders. After getting all of the easy ones (who are almost always very enthusiastic about the use of gas) we go after the hard ones. The first step is usually to call on them after supper when the entire family is at home. We generally mention the names of the families we have orders from, and further make the statement that the directors of the company will not allow us to extend the mains unless we get a certain number of consumers. We don't hesitate to tell them that by them not agreeing to use gas it will keep all the rest of their neighbors from getting it. To make a long story short, if we then fail to secure the order, we finish the canvass on all the rest until we are satisfied that we have secured every order that it is possible for us to get. We then make a list of the names of the families that will not give us the order, go back and call on all of the enthusiastic fellows that are anxious for gas, with the statement that we will not extend the mains because we cannot get a sufficient number of consumers. We also give them a list of the people who will not use gas and set a date that if they can bring influence to get them to buy a gas range, well and good, we will run the main; if not, they should call at the office and get their money back, as we do not care to bother with it any longer. Gentlemen, I want to say to you that the enthusiastic fellows who want gas get busy and in every instance I know of they get results. The best proof of this is the experience we had with an extension of this kind only a few days ago. There were 28 houses on the proposed extension; one was vacant and one new house not finished, that the owner was building to rent. After making the first canvass we started on the second canvass to take orders for new stoves. We sold 10 new stoves and found that 7 other families had gas ranges, which made a total of 17 consumers on the third canvass. We sold 4 more stoves, which gave us 21 consumers. We then called on the original 17, who were all very enthusiastic, and gave them a list of the other 7 families, and the next day they 'phoned they had gotten 5 of the people to agree to use gas, with a plea that they could not get the owners of the vacant and new houses to put in a gas range, but that they were sure that just as soon as the houses were occupied the people would use gas, and asked us if we would please run the gas mains without the two. We finally consented to make the extension as a personal favor to those who wanted gas. Men who tear down reputations always get most of the dirt themselves. What a jolly world of grand morals this would be if every new business man came up to the standard of perfection he fixes for his neighbor. Spasmodic attempts to get business rarely succeed permanently. It is the deliberate moving, cautiously, gradually and intelligently, that makes the financial success. It is a good thing for the man who looks at the corns on his hands to remember that the gas solicitor often has corns on his tongue. When a man has taken the third degree as a solicitor for gas, has put the finishing career of adjusting complaints in hot summers and chilly winters, has taken a course in hard knocks at the college of "give" and "take;" after he has been frappéd by the below-zero receptions, after he has simmered in the caldrons of high gas bills, after he has set his foot on the path that leads to the summit of the mountain "Success," after he has taken his post-graduate course in seeing hope deferred, I believe he should have a degree of commercial ambassador brought to him on a golden salver, for he is now a professor in the gentle arts of peace and plenty. The definition

of ambassador, as set forth in the dictionary, signifies an envoy of the highest rank, sent by one government to another for the advantage of both. If there is anybody in the world that knows more about diplomacy than the experienced gas solicitor knows of dexterity and skill, more of the art of conducting negotiations, I will cheerfully waive the title of ambassador and return to the old title of solicitor. I thank you gentlemen, for your attention.

Mr. Martin—Of course, conditions control largely the sale of appliances and the manner of distributing everything a gas company has to sell. I will tell you something about the way we manage in Omaha and of the trouble we have. We have the city divided into districts, and aim as nearly as we possibly can to put a man in each one who has peculiarities that will count for somthing in that particular district. Before a man is sent out on a district he is put with an older man for a sufficient length of time to become thoroughly posted on what is expected of him. We don't attempt to do that in the office, but have him come in direct contact with the work itself. Some men pick it up very rapidly; in a week's time they will put themselves in a position where it is safe to put them on a district and let them go ahead; others will take 2 or 3 weeks to accomplish the same thing. The chief difficulty about a new solicitor when he comes to talk to you, is his idea that he is going to work for a corporation that has no competition whatever, and thinks he is going to get a pretty soft berth, because it is only a question of going to the parties and telling them what they ought to do, and if they don't do it he will turn around and leave them. Mr. Stewart spoke about having different classes of stoves for different classes of people, grading them according to the financial standing of the people and the money that they had to spend. I believe in giving the poor man just as good an appliance as the rich man. If you make a distinction in your stoves, the first thing you know your solicitors are going to sell the cheap stoves. Our company doesn't believe in handling anything but the best of the kind we sell. We don't believe in handling a 12, 14 or 16-inch oven. The poor man is usually the one who has a regular orphan asylum—children everywhere in every corner, and he doesn't go to a baker for his bread. The wife bakes it. She wants an 18-inch oven, and she ought to have a 20-inch oven with some of the families we find. If you give her a cheap stove you sell her something that is a bunch of trouble, and she is not satisfied. Give her the best you have, charge her for it, and you will find better satisfaction in the end. We do not sell stoves or any appliances on the installment house plan. I doubt very much whether it would increase the total volume of stoves in this city if we did. We father the stove industry with the merchant and do everything we can to please him, and I think the merchants generally appreciate our efforts. They sell a great many stoves, and we in a measure control all connections by getting an order sent to us to connect them. We don't dictate to these merchants what they shall sell their stoves for. In case they get an appliance that does not meet with our requirements or that we consider a dangerous proposition, we advise them that it would not be safe to handle it, as they would in a measure become responsible in case of an accident. Sometimes that has its effect and the man discontinues the use of that stove, and other times he doesn't. If it happens to be a cheaply constructed stove, he might continue it because it is cheap and a good seller. We think the plan of selling a stove at $1 a month and taking the formal lease ordinarily used by the department stores, which stipulates that unless the payments are made regularly the stove will be removed, and that they have no title until it is paid for, and we can take it out of the house, generates a spirit of antagonism and creates enemies that the trouble department wouldn't be in with for a minute. If the neighbors see a big corporation taking out a stove it not only has a bad effect on the individual particularly interested, but on everybody in that block that sees the thing done. So neither I nor the company believes in this installment business, and while it might increase the volume of stoves sold, the difficulties that you would encounter and the trouble that you would get into continually from that source I think would be a detriment. Regarding the solicitor having a key to the prepayment meters, if in his district there were repeated troubles with meters being broken into and moneys extracted, it seems to me it would have a tendency to shake my trust in that particular individual who carried a key in his pocket and would operate against him to a certain extent. Our method of obtaining new business is somewhat along the lines of Mr. Stewart. We have the same difficulties he speaks of, and probably always will have. Some sections of the city, especially the poorer ones, have the houses thick enough so that it makes a first-class business proposition if you get two-thirds of the houses along the line. A request comes in from someone who wants gas. We have already had our solicitor cover that territory, and he reported that there was no consumption to be gotten there; that the people lived close to a railroad track, and by their agility in keeping out of the reach of the police officers were able to obtain their supplies of fuel from coal cars. But the request goes into the hands of the solicitor, who gets on the grounds and canvasses that particular block again, even if he has canvassed it half a dozen times, because in these localities the tenants change frequently, and people may have moved in who do want gas. If there are 6 houses in a block 250 feet long, and he gets two consumers, he comes back and makes that report, and, of course, we wouldn't care to cover that block under such conditions. The man who made the request originally comes in and we tell him that there is not consumption enough on the street to pay to run the main this year. So then he asks for some order cards and says he will see what he can do. He goes around the block and asks the neighbors to sign an application for gas, and then they can do as they please about taking it. We have gotten up against that proposition two or three times. We lay the main, get the two consumers that originally asked for the gas, and the others we probably won't get at all, or not for an unreasonable length of time. So I don't believe it is a good thing to let an interested individual in a block have anything to do with getting consumers for you, but let your own man go out and get all the facts; they will tell him the truth.

Mr. Colquhoun—I did not understand Mr. Stewart to say that he sold a cheaper grade of range, but more a variety of sizes. I think myself it is well to sell several sizes of ranges. I do not see why we should make the standard an 18-inch oven and insist that everybody buy it, regardless of the size of the family. In many places a small 3-hole range will suit the conditions very nicely. Personally, I believe in selling ranges on instalments, because I think it pays and you get better prices for your ranges. I think we ought to be able to get out even on our gas appliances now, for everybody has had more or less experience with the gas range and understands what it is, and hence can get better prices.

Mr. Clabaugh—The plan of selling stoves through the hardware dealers has been followed here for the last 2 or 3 years and has given a great deal of satisfaction. For a number of years we were the only ones who sold stoves. The dealers were selling gasoline stoves, coal ranges and wood stoves and doing everything they could to push their business. We all know that almost every cereal manufacturer sends out his samples all over the country to start with, wanting the people to go to their dealers to purchase. After they have expended a great deal of money in these samples they get returns through their merchants, and they in turn through their customers. Why is not the gas stove business the same thing? For the last 15 years we have been doing everything we possibly could to advance the sale of gas stoves. The dealers have not been selling them because they could not; we had the stoves at such a price that they couldn't compete with us. We believed that was good business, but the loss on the sale of stoves was such a burden that the gas wouldn't stand for it. Now we have 15 dealers in Omaha selling gas stoves. Each one has out at least one canvasser; that means 15 canvassers working for the gas company. They all sell different kinds of stoves and the price cannot be compared, because no two dealers are selling the same. We have 15 enthusiastic men selling gas ranges where before they sold coal ranges and gasoline stoves. They are spending a great deal of money in advertising. Shouldn't we do everything in our power to help them continue the sale of something that uses our product? Last year we sold 1,442 ranges, the dealers sold 986. It might have been possible that we could have sold these additional 986, but I doubt it. No matter how many friends we may think we have (and I think Omaha has probably as many as most cities) there are always some kickers who would not come to the gas company unless compelled to do so, and then would put it off as long as possible, but they will go to a dealer and buy from him. Some of the department stores and instalment houses are selling stoves at 50 cents a week or a month—or almost any price that the purchaser agrees to pay. They do not ask exorbitant prices for the stoves and are making only a fair profit. Probably with all our work we could not reach these people, because they go to the department stores to buy furniture and carpets, and a stove is just one of the incidental purchases. So, then, instead of one concern selling gas stoves in Omaha, there are 16—15 dealers and the gas company. Therefore, after having expended a large sum of money to introduce gas ranges, I think we ought to stand behind the dealer and help him in every way imaginable to sell gas stoves.

Nothing else in the world helps so much as competition. When the gas company is selling alone it has no competition; when the dealers are selling, every fellow wants to sell a stove. I believe there will be more stoves sold every year as long as we continue to help out the merchants. The reason that we want appliances out is that we may sell more gas, and I believe we can sell more on the endless-chain system than by trying to do the whole thing ourselves and having these fellows as competitors in other lines that will not sell our gas.

Mr. Stewart—Mr. Clabaugh, is it not a fact that during the time they controlled the sale of gas stoves they sold more stoves than they have during the same length of time since?

Mr. Clabaugh—We did not; but that is hardly a fair question, because we have been selling gas stoves in Omaha for 18 years, and to-day our sales are practically renewals. I will further say that not a new house has gone up in Omaha in the last 5 years but that the builder of which has put in a gas range. Many houses are so built that they cannot use anything else; they have no chimney in the kitchen. It is not a question now of good salesmanship to sell a gas stove, for the latter is a necessity, not a luxury. One item in respect of the new business proposition not brought out here, and on which I am something of a crank, is, the furnace connection in houses. Not a house is being built in Omaha to-day on which the plumbers do not figure on making a furnace connection, which means that we sell gas through gas stoves 12 months of the year instead of only during the summer months. I want to see these furnace connections put in all over the country, for they are good things for the company and consumer, and the more we do for our consumers the better our business will be.

Mr. Roper—Mr. Clabaugh, is it not a fact that you made these furnace connections in opposition to the plumbers, and that they waited on you and told you that you were interfering with their business, and you replied that they could go out and get the business if they wanted to; but if not, they would do it.

Mr. Clabaugh—Absolutely true. The President of the Plumbers' Union called on me and said we were interfering with their business. I wanted to know how that was, to which he replied by making the furnace connections. I said we had been doing that for years. It bears out the statement that we were the pioneers in that thing and that everybody asks for furnace connections now. If the plumbers want to do this work, why shouldn't we encourage them just as much as we encourage the dealers to handle the stoves?

Mr. Kidder—My experience with a dealer handling stoves hardly agrees with Mr. Clabaugh's—in a large city possibly that is a fact. Two or three years ago in Red Oak, Ia., one hardware dealer who was over-enthusiastic on handling gas stoves said to me he would like to sell them. I told him that was all right, and I raised the price of my stoves a couple of dollars to come up to his prices. I also told him I would give him $1 besides for every stove that he sold. That gave him, as he said, as good or a better price than he got from the gasoline stoves. I don't know whether the people have confidence in the gas company or not, but the fact is that he only sold one stove with all these inducements. But I have been very much impressed with the Omaha argument of the dealers paying the solicitors instead of the gas company, even if it didn't work in Red Oak.

Affiliation Representative.

The President—The next order of business is the report of the committee on a candidate for nomination for the affiliation representation to the American Gas Institute. Mr. Glenn Averill will report for the chairman of that committee.

Mr. Averill—Acting for Mr. Geo. S. Forrest, chairman, I report.

Your Committee appointed to recommend a candidate to serve as our Director in the American Gas Institute, beg to recommend that Mr. Jansen Haines be elected for the next year, and that hereafter the retiring President of this Association be its representative on the Directory of the American Gas Institute.

Geo. S. Forrest,
Geo. H. Waring,
L. L. Kellogg,
} Committee.

Upon motion, the report was adopted and the Secretary instructed to cast the ballots of the Association for Mr. Haines.

Mr. Kellogg—The committee in making this recommendation was not quite sure whether that will conform to the rules of the American Gas Institute, but we thought we would go that far or until we found out differently. I don't know whether the change of the Director every year would be satisfactory to the Gas Institute or not. We will find that out later.

Response of Mr. Haines.

The President—I feel very much honored by your nomination to represent the Association at the American Gas Institute Council meeting. I assure you I will do everything I can to further its interests. I am very glad this action has been taken, because I think in years to come it will lead to great advancement in our work to have a representative on the Council. I thank you very much for giving me the opportunity to be the first representative from this Association.

Mr. Tenney—Pardon me if I am out of order, but the paper that we have just had under discussion it seems to me is the cream of the gas business, the balance being as skim milk compared with it. I want to move him a vote of thanks. [Motion seconded and adopted.]

President Haines spoke appreciatively of the work of Miss Nash, the official stenographer, and on behalf of the Association presented her with a gold brooch set with pearls and amethyst. Completely surprised, she was able to express her sincere thanks only in a very brief speech.

Mr. Honeywell presented the

Report of Committee on Final Resolutions.

as follows:

Resolved, That it is the sense of this Association to extend a hearty vote of thanks to the Knights of Aksarben for a unique and most enjoyable entertainment, a night that will never be forgotten by the members of this Association.

We also extend our thanks to the Omaha Commercial Club, the city of Omaha, the hotel management, the newspapers of Omaha and our official stenographer. We also feel under special obligations to Messrs. Geo. W. Clabaugh and Geo. H. Waring for their untiring efforts for making this meeting the success it has been.

Geo. D. Roper,
L. L. Kellogg,
Homer Honeywell,
} Committee.

Mr. Carson—If in order, I want to verify to a certain extent the statement that I made yesterday regarding the use of bituminous coal for fire under benches, to the effect that it was taking about 15 pounds of fuel coal per 100 pounds of gas coal to carbonize it. To ascertain whether I was correct I wired home to get the information, and have the figures showing that during the month of January the actual amount of fuel coal used was 115,300 pounds, which, on the basis of the coal carbonized, figures 19 pounds to 100 pounds of gas. We figure that it is a saving of from $1,500 to $1,800 a year over the use of coke.

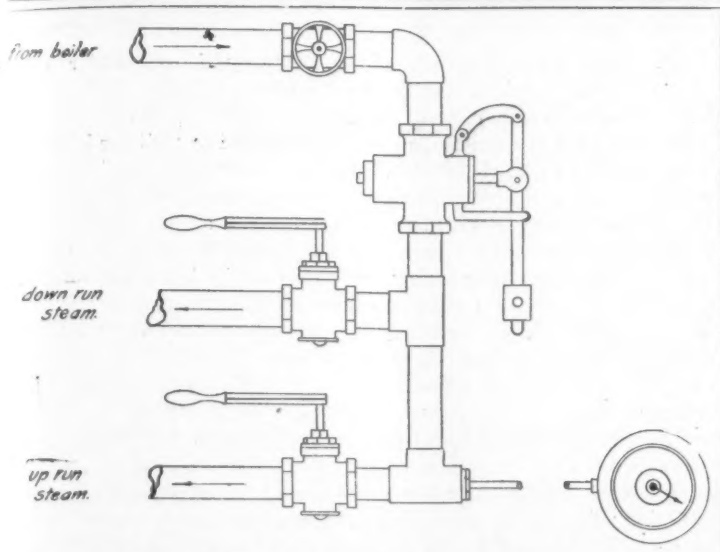
Adjourned.

The President—If there is no further business, the meeting will close. I am very sorry not to be able to introduce to you Mr. Averill, who was called away by important business last evening and couldn't be here to-day. He will be your new President in Waterloo at the next meeting, if the Council ratifies the sentiment of the meeting. In closing I wish to thank you all for your very careful attention and for the energetic way in which you have all carried on this meeting. I think it has been an inspiration to us all, and I hope all the meetings of the Iowa District Gas Association will improve as rapidly and thoroughly and efficiently as the last four meetings have improved.

Method of Regulating Steam for Generator of Water Gas Apparatus.

[Prepared for the Journal, by Mr. R. V. Howes.]

After some thought I devised an apparatus, the working principle of which is shown in the sketch, which I find is a sensible addition to a water gas apparatus, in that it properly regulates the steam supply to the generator of a water gas apparatus, rather than leaving that supply to the fancy of your men. I have cut into the line ahead of valves, controlling up-and-down steam, a regular pattern of reducing valve. By setting the balance weight and valve one obtains a constant pressure at inlet to up-or-down steam valve. For directly controlling the steam I use a regular pattern throttle valve. Both these valves are of the same dimensions as to opening, and as a reducing valve gives one constant pressure, I get some steam for both up-and-down and for each run. The operator simply opens the valve full, which is done with one motion—¼ turn of lever. I think this plan is more convenient and surer than that of the U. G. I. Company's micrometer cock, and it is very much easier and quicker than setting a globe valve by watching gauge each time. The amount of steam can be varied from day-to-day, if so desired, by either changing the



weight or reducing valve. In a small plant a micrometer cock turned to same point each time does not give you same amount of steam each time, because your initial pressure varies, owing to poor firing or to a variation of load in boiler or steam line. In our case, with no change in boiler room, we find our pressure on working floor varies from 5 pounds to 10 pounds, due to other uses of steam being variable and coming off main steam line. I believe this method of connecting up steam to machine is worthy of fairly general adoption, even though the cost would be greater by the cost of the reducing valve.

Address of the President (Mr. C. O. G. Miller) on the Occasion of the Santa Cruz, Cal., Convention of the Pacific Coast Gas Association.

To the Officers and Members of the Pacific Coast Gas Association—Gentlemen: As President of the Pacific Coast Gas Association I welcome you to the sixteenth annual meeting.

I feel that those of us now here, who were present 15 years ago last July, when this Association was formed in the Director's room of the old San Francisco Gas Light Company, on First street, must be well pleased with its great growth. This growth has been continuous, and I think we can all speak of our Association as I sometimes do of our State, when I say: I arrived in California in 1865, and ever since the State has been growing in wealth and population.

While our Association has been prosperous without interruption there is hardly a gas and electric company represented here that has not had a number of serious difficulties to contend with during the past 15 years, and I shall in this address briefly touch on some of the dark sides of the gas and electric business. I say, "briefly touch," as most of our members write papers showing concentrated thought on some important detail of our business, while I shall attempt to give a short account of several matters upon which volumes could be written.

Theoretically, men engaged in the gas business should give their principal thought to the manufacture and distribution of gas, and I suppose the larger number of people engaged in the business do so; nevertheless, much thought has always had to be given to the protection of the investment, and I shall in this address confine myself to some of the dark sides of gas and electric investments.

Many years after pirates were driven from the seas there were pirates in the gas business, and we still have them, although they are less in number and not so formidable. The tactics of the pirate are usually to build gas works to supply the heart of a city which is already being furnished by some prosperous company. This work is always accompanied by the assurance of the pirate that it is being done for the benefit of the community. At one time there was hardly a large gas company in the United States which has not been so attacked, but then there was usually in each city a center of consumption wherein with perhaps 10 per cent. of the mileage of pipe 20 to 25 per cent. of the total gas made was sold. That is seldom the case now, still occasionally the pirate appears; often, however, to be captured and executed. In present days he is usually a promoter or a man out of a job, and most companies view him with indifference. After pirating became no longer fashionable, and, what is more important, not so profitable, the principal dark side to the lighting companies appeared to be municipal ownership.

Twenty five years ago there was a very strong tendency in the United States towards municipal ownership in all directions. Like the 16 to 1 craze it had its day, working hardship on many an honest gas investor, but always a greater hardship to the citizens of the community where it was practiced, and now, after having been tried in many places and almost invariably found unsatisfactory, the agitation on the subject has so much lessened that I think the larger gas companies of this country no longer view municipal ownership with alarm.

In this State the present manner of fixing rates is a dark side of the business. The Constitution of the State of California gives great power in the regulation of gas, electric and water rates to the local municipalities. In the abstract this does not seem improper, for few, if any, of the larger light and power companies question the wisdom of the State as to regulating rates; in fact if a fair rate is fixed and protection is given the companies, they should welcome regulation. Up to the present time apparently not much attention has been paid to the subject by either the municipalities or the companies, and I am under the impression that, with the exception of the rates in effect in the largest city, practically all of the gas and electric rates now in force in this State have been made voluntarily.

For the benefit of those members who have not actively participated at a rate making meeting, I will give a brief account of one. In accordance with a written, or advertised, demand from the municipality, the company usually furnishes, by January 31st of each year, a statement of the receipts and disbursements of the previous calendar year, and a statement of the cost and value of the investment. Usually one session of the governing body is devoted to asking questions concerning the statement. Sometimes an expert is engaged by the city for the purpose of investigating the statement furnished by the company. If the city and the company are at no variance regarding the rate, this inquiry suffices, but when there is a difference practice has usually made it necessary for the governing body to determine the rate after a very superficial and hurried investigation. It is extremely difficult for a layman to grasp the situation in the short time devoted to it, especially when he feels that his action in the matter may be misunderstood. When the time for the regulation of rates arises, a councilman or supervisor, elected on a platform that calls for a reduction in the gas and electric rates, is hardly in a proper frame of mind to listen to evidence and impartially vote thereon. No matter what the evidence is, if he does not vote for a reduction a large number of citizens, and all of the daily papers, will accuse him of being biased in favor of the corporation—no reflection upon any city council or board of supervisors is intended. I assume every member of every municipal governing body is actuated by the highest motives, but that does not qualify such a man, in the short time allotted, to determine a fair rate for gas and electricity.

Other States have recognized the fact that the local governing body is not the best one to have jurisdiction over the rates, and presumably California will some day take action in the matter. The State of Massachusetts fully 25 years ago provided a Board of Commissioners with large powers over the rates, and recently the State of New York has turned over the power of fixing rates to a State Commission, so I think that the California members of our Association should take up the matter of an amendment to our State Constitution so that a change may be made. Mentioning these facts alone will accomplish nothing. Someone connected with the larger companies of the State should take hold of the matter and diligently attend to it until what is needed is accomplished. A resident of San Diego or Siskiyou counties is very likely to impartially fix the rates for San Francisco or Sacramento, while the resident of San Francisco will probably make fair rates for Siskiyou and San Diego. It will take several years to have our State Constitution amended; meantime the companies will have to get along the best way they can. My close associates and myself have always been believers in low rates, and have preached for years the doctrine that low rates and courteous treatment to consumers will do away with one-half the troubles of the gas man.

I might say a few words about taxation, a formidable question to those companies paying over $100,000 a year in taxes, especially as quasi-public corporations are usually assessed on a much higher basis than private individuals; but a solution of that matter is now before the people of this State in the form of a proposed amendment to the Constitution. All members of this Association and their friends should vote for the adoption of the amendment which takes the taxation of quasi-public corporations out of the hands of local assessors. Every change in the method of taxation and rate making, that lessens the possible friction between quasi-public corporations and the com-

munity they serve, makes the investment more secure and should be welcomed by the corporations.

Now, for a few of the pleasant features of our business. The stability of our business is a pleasant feature. Based upon the experience of the larger companies, in California, in 1893, 1896 and 1907, it is safe to say that the majority of consumers use approximately the same volume of gas and electricity in poor years as in good ones. With this regularity or stability in the business there goes of necessity a corresponding regularity in the profits, which is a very pleasant feature. With few exceptions the gas man knows in January within 10 per cent. what his December business will be and usually has time to provide for it.

Another pleasant feature of our business is the annual meeting of our Association, where we are always so well looked out for by our Secretary, who I understand has again amply provided for our entertainment.

The Humorous Side of a Gas Man's Life.

[Prepared for the Santa Cruz (Cal.) Convention of the Pacific Coast Gas Association, by MR. W. H. FOSTER.]

In presenting this subject it has been the writer's desire to illustrate particularly such operating conditions of the wealthy San Francisco suburb which differ from those of the large cities or the smaller interior towns. There will be considered, first, the class of people supplied and their relations with the local company; and, second, the purely commercial side of suburban distribution.

As to the people, the suburban town is composed for the most part of merchants and professional men whose business is in the metropolis and whose homes are, for at least a portion of the year, in the suburb. While it would not be right to say that all of these consumers class as wealthy according to the standards of the day, yet there is no question but that the proportion of wealthy consumers is far-and-away above that in the large city or the small town away from the city. There is, of course, a middle and a laboring class, but the local business district is limited. There are no factories employing large numbers of men, and the early rising hour deters the majority of this class from living further than necessary from its labor in the city.

Now, assuming that a large percentage of the output of gas goes to wealthy consumers as compared with the cosmopolitan class of the great city, or the small merchant or mechanic of your interior or manufacturing town, let us see the effect upon the ordinary transactions of the gas office.

In the first place, the rate per 1,000 charged for gas is immediately up for comparison with the San Francisco rates. Not that the San Francisco rate could not easily be known by any consumer of gas within 100 miles of the bay, but the fact remains that very little comparison of rates has been made between various towns and cities, although more of this is being done all the time. Your consumer, having his business in San Francisco, and being really more vitally interested in the welfare of that metropolis than in the town of his residence, and being very probably a consumer in San Francisco as well, is sure to know the rate in that city and to compare it with the suburban rate. To him must be explained the difference in output and the increase in freight rates above those of terminal points. To his credit, the average consumer knows the argument to be well grounded, the hardest point to convince him upon being the variation in price between fuel and illuminating gas, and much persuasive eloquence is sometimes necessary to convince him that he should pay $2 per 1,000 for lighting and get the same gas (for which he pays $1.50) for fuel.

Next, many of your consumers have servants in their kitchens, and if you can believe the ladies (and if you cannot, what hope is left for humanity?) everyone of these servants is a jewel and a perfect model of economy. Of course, even a lady may make a mistake, as for instance in one case where a particularly strong complaint came in with regard to the size of a bill. The office was assured that the Chinaman was an old family servant, that he was really the very most saving person in the world, and, were he not, the lady of the house gave her personal supervision to the kitchen, so that there must have been something wrong with the meter. .

Alas for fallen idols! An inspection at 10 o'clock disclosed the fact that both oven burners had been going since 7, when they had been lighted to make the breakfast toast! .

Naturally such damaging evidence was sufficient to close the argument. With servants using gas, the accuracy of your meter is continually pitted against the word of a servant. It is needless to say that the meter is always wrong so far as the consumer is concerned.

In the matter of collections you are requested to mail the bill to the consumer's San Francisco office, which you do regularly and promptly, making the bill out net. On the 10th of the month, no check appearing, you add 50 cents per 1,000 and try again; then about the time your new bill arrives you receive the consumer's check. You did all this years ago, but after facing the storm of indignant communications, which even the stenographers must have trembled to write, knowing full well how the "old man's" spleen must have been irritated to bring forth such a flow of satire and infective, you gave it up and the memory of the gross rate exists in a column on your bills in which no figure ever appears. Those bills which are paid at the office are paid by the women almost entirely, and such complaints as are made directly to the local office are made by the ladies.

This leads to one of the most peculiar phases of this suburban distribution; that is, the matter of complaints, whether regarding service or bills. It may be that your consumer has a few hundred shares of preferred P. G. & E. in his vest pocket, or he may know some of the august ones who rule on high—I was going to say the "higher ups;" but, perish the thought, I refer to the Board of Directors. Or he may eat at the same club, or he may ride on the same train or boat with someone in touch with the San Francisco office. At any rate he unfolds his tale to someone who has many more important things to think of, and in 1, or 2, or 3 days, the complaint arrives at its proper destination, the local office, your consumer suffering meanwhile and working himself to a higher point of righteous indignation. One such instance is worthy of notice where a gentleman felt that the gas service was in such a condition as to warrant immediate investigation and wholesale reconstruction.

The dangerous condition of affairs was confided at a luncheon in San Francisco, and post-haste (2 days later in this case) the local office notified. The complaint list showed the minimum and the weekly report had stated that everything was running well; but there could be no mistake, some serious trouble existed. A personal investigation was required and a report forthwith.

No, the mains were not full of naphthaline. Gas was not being delivered from the relief holder, no one had by-passed the purifiers; only, the consumer had failed to remove the lava tip before connecting a portable lamp!

On the occasion of the next complaint would the consumer place the complaint directly with the local office? Never! That might lead to a state of affairs in which the gas man would listen to complaints during business hours only, and each complaint would be registered at the complaint counter, a condition which everyone knows can exist only in some future world.

Now, as to the selling end of the business, the casual observer might expect a splendid revenue from these wealthy consumers, and in the days before the advent of electricity this was true, but with the wiring up of the old residences came a falling off in illuminating revenue, and to create a demand for fuel gas in the homes of the rich is by no means easy. With servants in the kitchen, the hot summer days do not bring thoughts of the cool and comfortable gas range to the housewife as they do to the woman who does her own work, and the French range is suffered to roar along whether the temperature is 40° or 90°. However, the servant problem in the suburbs is by no means easy, and if Won Lung finds that the family on their return from golf or tennis have exhausted his supply ofhot water his wrath is awful to behold. It was thus that the instantaneous water heater was introduced where the gas range was an impossibility.

The sale of appliances in the suburb is, however, a difficult proposition at best, for several reasons. Although there are local papers they are printed weekly, and as the San Francisco papers are at the door of the suburban home by 7 in the morning, little attention is paid to the local paper, except for local news; and, as for an advertisement, it is worth practically nothing. Again, the local business district being small, and the stock in proportion, the commuter gets the habit of buying his supplies in San Francisco, and naturally applies this to gas appliances as well as to anything else. Consumers have been known to buy hot plates in San Francisco at $7.50 plus the express charges, when the same plate was being sold in the local market for $7.

The sale of gas arcs is also restricted because of the limited business district, and the fact that people do not promenade the streets in the evenings as they do in the cities, thus offering no inducement to merchants to keep their stores lighted for the display of their wares.

Cheap, flat electric rates, as against the necessarily high gas rate, also work against the introduction of special illuminating appliances; and again, the natural feeling of a company selling both gas and electricity, that what does not go into one pocket will go to the other, does not stimulate the offer of special inducements for the increase of illuminating sales.

It is the hope of the local gas man to see the vacant spaces in the town fill up with the cottages of small merchants and salaried men, for in these homes the housewife does the cooking and appreciates a gas stove and uses it with judgment and economy, so, though the monthly bills may be less, the father of the family may be educated to read his own meter and thus to know the correctness of his account and, with fair treatment and good service, will become and remain a friend of the gas company.

Purification Problems.

[Prepared for the Santa Cruz (Cal.) Convention of the Pacific Coast Gas Association, by MR. E. L. HALL.]

Ever since the advent of illuminating gas the presence of sulphur in the gas making materials has resulted in varying quantities of sulphur derivatives in the crude gas. These consist, besides sulphuretted hydrogen, of bisulphide of carbon, thiophone, mercaptans, sulphocyanides and other sulphur combinations, not all of which have been identified. All of these sulphur combinations burn with air to form sulphurous and sulphuric acids, and gas from which they have not been at least partially removed cannot be used without great discomfort. Moreover, the constant inhaling of these fumes will produce a chronic irritation of the mucous membrane and lining of the breathing passages, predisposing to diseases of the lungs and throat. Nor are the effects confined to discomfort and personal danger; nearly all metallic objects, such as gas appliances, fixtures, etc., are easily and thoroughly corroded, and goods, such as hangings, wall paper, etc., are bleached and faded.

Sulphuretted hydrogen, comprising the bulk of these impurities, is very completely removed by all the gas companies. It is to be regretted that the gas industry has done so little to reduce the amount of the organic sulphur remaining in the gas after purification from sulphuretted hydrogen. Consumers have squirmed and electric companies have rejoiced, and the phrase "evil-smelling gas" has stuck, to the hindrance of gas sales and to the loss of the gas companies.

In either coal gas or water gas, made from very sulphury materials, the organic sulphur attains very formidable proportions. In some places a maximum limit has been imposed, usually at from 20 to 30 grains per 100 cubic feet. By the partial removal of the carbon bisulphide those companies under restrictions manage, with much trouble and at considerable expense, to keep under the limit. This is effected by the use of "sulphided lime," but with the greatest irregularity and uncertainty, and with the added danger of at times increasing instead of reducing the amount of organic sulphur. The spent material is a great nuisance and source of expense for removal. However, no better method up to the present time has been worked out, although a gas chemically pure from sulphur would be a great boon to the industry. It is believed that a step in advance, leading perhaps to a solution, or at least to a better understanding of the problem, has been taken by the Company with which the writer is connected, the Portland (Ore.) Gas Company. This Company manufactures its gas by the so-called "crude oil water gas" process, as generally used by the gas companies of the Pacific Coast.

As is well known, most of the crude oil coming from California contains very appreciable amounts of sulphur and, therefore, as would be expected, the amount of organic sulphur in the purified gas is quite high; so high in fact that much discomfort has been experienced by the gas using public in all of the Coast towns. In perfecting an apparatus to eliminate this trouble 2 years' of experimentation were necessary. It had first to be shown that the organic sulphur is of the same nature as that in coal gas. Theories then had to be worked out to account for its presence and for its behavior. Study of the cause of formation of the organic sulphur has been attended by the same difficulties that have made naphthaline investigation so perplexing. The reactions in gas manufacture, even more than in other chemical industries, are deep seated and little understood. It has not always been possible to ascribe any one variation to any one particular cause. It has often doubtless happened that the effect of one cause has been to neutralize and mask the effect of another cause.

Among the factors that we find to influence the amount of organic sulphur present in the purified gas are the percentage of sulphur in the raw material, the gas making temperature, the accumulations of tar and oil in the works, the condition of the purifying material and the amount of washing and scrubbing. Excepting, of course, the percentage of sulphur in the oil, we have not been able to vary any of these factors sufficiently to appreciably reduce the amount of organic sulphur.

In regard to the purifying material, it has been frequently observed that the purified gas will regenerate traces of sulphuretted hydrogen in the unpurified box. This action may be explained by the presence of cyanides in oil gas amounting to from 50 to 60 grains per 100 cubic feet. Another theory to account for this action would be the presence in the purifying material of amines with which the carbon bi-sulphide would react as follows:

$$CS_2 + 2\,C_6H_5.NH = CS{<}^{NH.\,C_6H_5}_{NH.\,C_6H_5} + H_2S$$

in other words, sulphuretted hydrogen and thiocarbanilide would be produced, which latter may decompose in turn to form phenyl mustard oil and aniline. The aniline is again capable of repeating the cycle. That some such action is taking place in oxide for oil gas purification has been many times verified and it is thought to be closely connected with organic sulphur.

For removal of organic sulphur the old "sulphided lime" method was first resorted to but was abandoned because of the high cost and uncertainty attending its use. This was followed by attempts to vary the operating and purifying conditions, with but meager results.

Different chemical substances have been tried as solvents in the laboratory, with varying success and always at a cost prohibitive on a manufacturing scale, for the cost of the solvent and operation must be less than the difference between that of oil gas and the next cheapest process with no organic sulphur. The last and most promising of all methods tried was the passing of the gas through red-hot tubes in order to break down the organic sulphur to H_2S with subsequent easy removal by oxide of iron purifiers.

The first experiment was performed in a piece of hard glass tubing heated in a combustion furnace. Purified gas was passed through and gave a stain on lead acetate paper. The glass was replaced by a piece of iron pipe as the heats raised, with even better results. The introduction of steam still further increased the efficiency. The process was set up on a small scale in the laboratory and was run for some time. The analysis of the reheated and purified gas gave as removed 66 per cent. of the organic sulphur.

After this a small plant was set up consisting of, at first, a 30-inch cast iron pipe filled with scrap iron heated in a brick oven and connected to two 6 feet by 6 feet purifiers. The gas was taken from the station meter outlet and discharged into the storage holder. Owing to the large size of the pipe, the best result that could be obtained steadily was 50 per cent. removed at a rate of 15,000 cubic feet per hour. This arrangement was replaced by five 4-inch tubes and eight 3-inch tubes, 8.5 feet long, respectively, with a total heating surface of 126.5 square feet. The results with these tubes were much improved. Various rates of flow and amounts of steam were tried as tabulated below:

Flow of Gas, Cubic Feet per Hour.	Steam ¼-inch Nozzle.	Temperature, Degrees		Grains H_2S per 100 Cubic Feet by Titration with Iodine.
		Cent.	Fahr.	
19,700	None	350	662	15
17,000	½ open	460	860	15
15,000	full	500	932	25
14,200	½ open	410	770	50
10,200	½ open	520	968	50
Average.. 15,280	....	448	838	31

These results could undoubtedly have been bettered with still smaller tubes, giving better contact. Also by retainers in the tubes to disseminate the heat and impart a mixing motion to the gas, but the heat destroyed the iron pipes too rapidly and the iron tubes were abandoned in favor of an internally heated apparatus. The chemical action taking place is thought to be the reverse of that taking place in the generators, or

$$CS_2 + 2H_2 = 2H_2S + C$$

or, if the hydrogen be derived from water vapor,

$$CS_2 + 2H_2O = 2H_2S + CO_2$$

and similarly with the other combinations of sulphur.

When operating at low temperatures, varying percentages of the total will be decomposed according to the effective heat. After purification a second reheating will decompose a further portion. If the same temperature is maintained during both reheatings the same pro-

portion would be removed each time; *i. e.*, say ½ the first time, then, again, ½ of the remainder, and so on.

It is thus seen that for any one temperature there is a balance established between the organic sulphur broken down and that remaining, and this balance shifts as the temperature increases in favor of breaking down a larger proportion of the whole. And for any one temperature this balance will persist until a part of one side of the equation has been removed; *i. e.*, until, according to the law of mass action, the concentration on one side is reduced, enabling more atoms to pass over to that side in unit time than can return, when a new equilibrium is established. This in turn will persist as in the former case. Therefore, to remove the organic sulphur at a low temperature, several reheatings and purifications would be necessary. At a very high temperature most of the impurity is broken down with one reheating. For these reasons also the gas should be purified before the first reheating. Since the experiment revealed the unsuitability of iron tubes to reheat the gas, an apparatus was designed to handle the output of the works.

The apparatus consists of 2 firebrick lined shells, filled with staggered checkerbrick similar to the ordinary water gas superheater. Between these two is another shell similarly lined and filled, but about half as high. This shell, or generator, is equipped with oil burners or solid fuel, for alternately heating up the two gas reheaters. For this purpose the generator is connected up on either side by hot valves with the bottom of the reheaters. The latter are provided with the regulation stack valves and off-takes dipping into a common washbox. The purified gas is admitted alternately to the bottom of each reheater and goes through the hot brick, where the organic sulphur is broken down into sulphuretted hydrogen. After passing through the washbox the gas is passed through a scrubber and then through secondary oxide of iron purifiers.

In this process the brick are maintained at a cherry red heat, and at this temperature (700°–900° C.) the organic sulphur is almost completely broken down. Remaining after a second purification will be only traces of organic sulphur.

At this temperature the candle power does not seem to suffer at all. However, in oil gas making this is a matter of indifference, for lower heats can easily be carried in the gas generators, making the gas just rich enough to offset any loss in the reheaters and, of course, at the same oil per 1,000 in either case.

It has not been found necessary to introduce steam into the reheaters, as aqueous vapor is normally present in the gas in sufficient volume to furnish nascent hydrogen for the reaction. The plant has now been operating steadily and the organic sulphur is broken down with great certainty.

In conclusion, the following theory is offered to cover the facts as set forth in this paper. The formation of carbon bisulphide in the generator may be conceived as being due to a reaction between the H_2S and carbon produced by decomposition of the oil, according to the following equation:

$$2H_2S + C = CS_2 + 2H_2.$$

When one considers that sulphur and oxygen are of the same chemical family and act analogously in many ways, we see at once the counterpart of the well known water gas reaction:

$$2H_2O + C = CO_2 + 2H_2,$$

which strengthens our theory. The fact that the water gas reaction increases in efficiency with the rise of temperature argues for the same effect in the analogous CS_2 reaction. In other words, we would expect that a larger proportion of the total sulphur would appear as CS_2 with higher heats, and this has been the universal experience of gas men. In the vertical retorts, as at Dessau, where the gas is not exposed to overheating as in the horizontal retorts, lower CS_2 has been found. For any one temperature effect, therefore, a certain definite ratio of H_2S to CS_2 may be expected. In oil gas conditions and temperatures it may be taken as something around 8.5 to 1.

It is to be expected that a point may be reached in temperature where the ratio will no longer increase and may in fact decrease. In the reheating effect we have merely the necessary readjustment to this same ratio, after the removal of one side of the equation and the restoration of the temperature of reaction.

THE receivership of the properties of the Fort Wayne (Ind.) Gas Company, which has been admirably carried on by Mr. Henry C. Paul, was terminated last Wednesday.

Private Electric Plants in Central Station Territory.[1]

A paper discussing means for overcoming private plant competition was read by Mr. B. H. Gardner at the recent convention of the Ohio Electric Light Association. The existence of private plants was attributed to excessive rates charged for central station service and to the lack of healthy co-operation between the central station, the local contractors and the large manufacturing companies. The local contractors may be of great assistance to the central station, and, on the other hand, they may be a stumbling block in the way of much new business. They are naturally in a position to hear of many new concerns, to hear of proposed changes in motive power equipment, and are often asked to bid on this new work before the central station representative could learn of the matter. It is easy to see that if the contractor had the proper feeling for the central station and would notify the manager or contract agent of all the various moves of which he has knowledge, much valuable business would be acquired. On the other hand, much of the business will probably be lost if the contractor has a grudge against the central station, and spreads the belief that its rates are high, its treatment of the public unfair, and the best thing to do would be to install a private plant and be independent of the lighting corporation, etc. Experience has proved that the goodwill of the contractor is a powerful asset and that he can make a most valuable booster for central station service; but in order to get this hearty co-operation, and the benefit of this boosting, the central station must stand ready to do its full share. It is not reasonable to suppose that the contractors as a whole will be very enthusiastic central station boosters if the central station interferes with their business by selling fans, heating apparatus and supplies at cost, if it does wiring at cost, or near it, or if all of the business the central station representative can give out is thrown to some one contractor.

What has been said of the local contractors as valuable allies applies with equal force to the electrical manufacturing companies. They, even more so than the contractors, are called upon to bid upon new machinery, motor equipments, etc., many months before the plans are made public, and usually before the central station representative could possibly learn of these things. It is easy to see the benefit that would come from having the hearty co-operation of these companies, for in addition to being posted on all such new concerns, contemplated changes in equipments, etc., the representatives of these companies often make quiet but effective boosters for central station service. The central station should be, and usually is, the largest purchaser of electrical apparatus in the territory which it serves, and all of the electrical manufacturers are naturally very anxious to receive their share of this business. Moreover, the motor business which a wide-awake central station manager can turn over to the manufacturers in the course of a year will largely outbalance the few private generating plants they might install in competition with the central station.

To cause a private plant to be abandoned after the plant has once been put into operation is usually a very difficult task, especially as long as the operation is fairly satisfactory. The successful merchant or manufacturer will not abandon his plant simply because the central station representative tells him it will be better or cheaper for him to do so. He must be shown wherein it will be better, and figures must be produced for proving that it will be cheaper. To obtain these figures it is often necessary to make an actual test on the premises, determining the kw.-hour consumption, cost of coal, cost of labor and all other items that enter into the finished cost. For many small plants such a test will show a rate for energy so high that it may easily be closed down without further trouble. For the larger plants the cost is often more nearly that of the central station itself and, of course, the margin to go on is not so large. However, there are few owners of plants that are not willing to pay 10 or 15 per cent. more for energy for lamps and motors in order to rid themselves of the annoyance of a plant. Knowing the cost of operating a private plant it is largely a matter of meeting this price and discussing arrangements with its owner until it is finally closed down. Of course, this is much easier said than done, but it can be done by putting in appearance at an opportune moment after some break-down or serious trouble, for such trouble is bound to come sooner or later to every private plant. Or, if no mishap occurs, the owner of the plant may often be persuaded to close the plant down for a year, during this period using the central station's service, in order that he may determine the desirability of purchasing energy rather than attempting to generate it himself. If necessary, it is advisable to take this busi-

1. *Electrical World.*

ness for a year's trial at a flat rate—this flat rate to be determined by the private plant cost of the previous year. At the end of the year's test a long term meter contract may be entered into at whatever rate the test shows the consumer is entitled to, and there are not many people who will go back to a private plant after a year's use of reliable and satisfactory central station service.

It is often the case that private plants, especially lighting plants in business sections, supply energy for lamps in adjoining buildings. In making tests on such plants it is always wise to meter the consumption through these circuits. Often the parties buying energy from a private plant are the victims of high flat rates, defective meters and the manipulations of meter readings, inefficient lighting units, etc., and it is easy to take away much of this business from the private plant.

Many small lighting plants may be closed down by the central station recommending some more efficient system of lighting. Consider, for instance, a store lighted with clusters of carbon filament lamps, or old-style arc lamps. As long as this system of illumination is adhered to, it may be impossible for the central station to get the business; but if it will recommend or even furnish the first installation of tungsten lamps, a satisfied consumer and valuable business may be secured without much trouble or expense.

In the case of a private plant that is supplying energy to motors, it is just as important that a thorough test be made showing the finished cost per kw.-hour, as in the case of a lighting plant. Such a test is often all that is necessary to take over the business, and for those plants where the cost is near the delivered cost of the central station the same tactics may be followed as were outlined for the lighting plant.

Many small power plants may be closed without a great deal of trouble by the central station representatives pointing out a more economical arrangement of line shafting, subdividing the load, and in other ways cutting out useless friction, and making energy as purchased from the central station much cheaper and more convenient. It is often desirable, where the central station representative is sure that a saving can be effected, but where the prospective customer has his doubts and will not risk the investment without being assured as to the costs of operation, for the central station to loan the necessary motor or motors for a 60 or 90-day trial, so as to prove the point. In these cases it is better to let the prospective customer stand the expense of installing the apparatus, but if necessary it is good policy for the central station to assume one-half, or even all, of the cost of installation. Where it is necessary for the central station to assume all of the risk a written proposition should be made to the prospective customer offering to furnish and install a motor of certain horse power, speed and make for a reasonable length of time, it being specified that if at the end of this trial period the service and the cost of operation are satisfactory, the central station is to be reimbursed for the cost of the wiring and for the motor itself, the exact cost of each being set forth. Of course, it is not advisable to make such a proposition to every prospective customer, and great care and judgment should be exercised to make sure that an unfair advantage is not taken of the offer. It will be found, however, that a judicious use of such trial propositions will result in the securing of much valuable business that would hardly be secured in any other way.

Such trial propositions, valuable as they may prove in closing down existing plants, are even more valuable in keeping private plants from being installed initially. Often a manufacturer in erecting a new factory is in doubt as to his motor equipment and will gladly receive suggestions from the central station representative as to the horse power requirements, best methods of arranging machinery, line shafting, etc. In this way it is often possible for the central station to equip a new factory with motors and have them so arranged as to get the best economies, with the understanding that the factory will operate with central station energy for 3, 6 or 12 months, until demand, load factor and rate can be intelligently determined. In small shops and factories it is even advisable to loan the motor or motors and, if necessary, do the wiring.

A medium sized central station has consistently followed a course, as mapped out in this paper, for 2 years. During these 2 years, gas and steam driven plants have been displaced by central station service, the aggregate rating of such plants being more than 1,500-horse power, while about an equal amount has been added to the connected load in new buildings and factories, where the owners first considered some other form of energy. The central station that has never adopted such a policy will find that it pays to do so.

Special English Correspondence.

COMMUNICATED BY NORTON H. HUMPHRYS.

SALISBURY, ENGLAND, September 10th, 1908.

The Gas Works Retort.—Parliamentary Returns.

Gas engineers as a body have lately been taken to task on more than one occasion for their ignorance respecting the reactions that occur in the hydraulic main, and for their adherence to the dip pipe, which is now discovered—or re-discovered, it would be more correct to say—to be simply a close relative of the spirit of evil in disguise. There might be more truth in a similar accusation as regards the retort. Murdock, we are told, experimented with various shapes and sizes of retort. But the profession in general soon settled down to the 9-foot horizontal. The excuse may be urged that they were tied by the conditions of labor. These certainly took the first place, and for more than half a century the D and the O section had the field to themselves. The monotony was varied by one or two dissentients, who manifested a preference for ovens capable of taking 15 cwt. to 20 cwt. at a charge, but I do not remember to have met with any carefully reasoned claim in their favor, although the direction of events appears to show that the followers of the oven were on the right track, for the general trend is now decidedly in the direction of larger charges. But the oven did not find general favor, the 9-foot horizontal reigned supreme, and the only interest attaching to the subject took the form of an occasional mild dispute between D *versus* oval. The chief consideration was the convenience of the stoker, who prefers a 6-hour charge and that not larger than can be comfortably put in by two scoop loads. Whether these conditions were the best, either for yield of gas or quality of coke, was outside the region of practical politics.

But the introduction of machinery that will throw an even charge into a 20-foot run of retort, and push out the coke, has done away with all this. The machine wants no fixed meal hours, no recreation and no sleep. It can be as readily arranged to throw in 2 tons as 2 cwt. So that engineers can now review the carbonizing process in the new light of practically unlimited time and practically unlimited quantity. As a natural result, all sorts of arrangements and sections are being tried. There are vertical, forty-fives, and inclined, all of which find enthusiastic followers and admirers. A new addition is comprised in a patent recently taken out by Mr. Thomas Glover, of Norwich, which covers the use of deep retorts, *i. e.*, retorts about three times the depth of the width. The drawings given as a means of illustrating the invention comprise a bed of six horizontal retorts, about the usual length of throughs or doubles, but rectangular in section, 13 inches wide and 3 feet deep. The ovens above alluded to were invariably set the other way about, the width being much greater than the height. The deep retorts evidently have the advantage that they can be fixed in an ordinary arch, and that they could be introduced, one setting at a time, in any retort house without reconstruction of the arches or interference with existing arrangements. The aid of modern machinery will enable the retort to be charged with 1 ton of coal at a time, but before entering upon the advantages that would follow the adoption of 20 cwt. charges in place of 7 cwt., one wants to know how many hours would be required to work off the larger charge. It will be seen that the deep retort is a sort of three-quarter breed between the ordinary gas works retort and the coke oven. We know fairly well the results that can be obtained from both of these arrangements, but between these there is a large gap that has not been thoroughly explored. One advantage claimed is that whereas the gases from the ordinary retort pass slowly along the vacant space between the crown of the retort and the upper surface of the charge, and are subject to severe decomposing action, which is proportioned to the area of such free space, in the deep retort the area will be much less as compared with the bulk of coal and, therefore, such decomposing action will be appreciably reduced. The charge of coal, as above mentioned, would fill about two thirds of the capacity of the retort when cold, and after reasonable allowance for swelling, it is evident that the clear area above the charge would be less, and the travel of the gas several times faster than under ordinary circumstances. In regard to this point one would like to know something about the direction followed by the gas in travelling from the parts of the retort away from the ascension pipe. Some years ago I was engaged in experiments with vertical retorts, and found that, with anything like a deep charge, say more than 3 feet, there was invariably a clear space formed at the center, through which the

gas travelled in preference to traversing the solid material. Working a horizontal experimental retort with charges that fairly filled it, the same thing was observed. The charge distinctly separated into two sections, with a clear space between. Possibly this does not obtain with all kinds of coal, as the existence of such action has been denied. It will be interesting to know the experience at Norwich on this point. No advantage is claimed in respect to yield or quality of gas, but it is claimed that the coke would approximate in quality to the metallurgical coke produced in by-product coke ovens—being dense and in large pieces.

At one time a moderate amount of secondary decomposition was considered to be an advantage as increasing the yield of gas, and there was a strong opinion in favor of light charges, or of larger retorts. Many engineers increased the section of the D retort from 21 × 14 to 21 × 16 inches, without any corresponding increase in the weight of the charge, with the express object of enlarging the area to be traversed by the gas on its way to the ascension pipe. This was before the days of generator furnaces and when lower carbonizing heats were usual. But now the idea appears to be, to depend upon primary action, and to regard the secondary action as an undesirable that should be reduced to the utmost extent practicable.

The annual Parliamentary returns for the gas industry in the United Kingdom have just been issued. They are somewhat antiquated, seeing that in the case of companies they cover the year 1906, while the local authorities' figures are for the year ended 31st March, 1907. We find that the largest gas concerns can arrange to publish full reports and accounts within a month after the expiration of the period concerned, and that various statistical returns for the year 1907 have been published months ago by private firms, so the value attaching to the official returns is greatly discounted by lapse of time, and it would appear that there is room for improvement in the Board of Trade methods. A great deal has happened since December 31st, 1906, and parties using the returns for any special purpose would need to supplement them by the aid of later publications. Bearing this point in mind, a great amount of interesting and useful detail can be gleaned by anyone who is not afraid of figures. Quantities running into a dozen or more digits are somewhat alarming to the average easy going citizen. The dominant feature throughout is healthy, steady progress. The case of the hare and the tortoise tells particularly in connection with commercial ventures, as a steady 3 or 4 per cent. increase, followed up year after year, is much more advantageous to all concerned than record advances interlarded with periods of stagnation. Perhaps our forefathers were not over energetic in the matter of developing and extending trade. But if they did not go forward very rapidly, they did not go back, and have left us a solid foundation to work on. In these days of hustle and push, it is becoming evident that there is such a thing as over canvassing and truckling too much to the new customer. The new customer may be a valuable auxiliary, but the old customer is the backbone of the business. The returns show that there is, or rather was up to 18 months ago, a satisfactory increase in such important items as mileage of mains, number of consumers and number of public lamps. There were over 5 million consumers, the main pipes would form a girdle round the circumference of the earth and leave a sufficient remainder to go the best part of the way through the diameter, while the public lamps would suffice, spaced 80 yards apart, for the lighting of a road of similar length. Then it is evident that the expression "coal gas" becomes more and more inaccurate every year. One authority has already substituted the expression "town gas" as being more appropriate. The quantity of gas other than coal gas, consisting substantially of water or cupola gas, has doubled within the last 7 years. Eighty companies and thirty-six corporations are returned as supplying water gas, in proportions ranging up to nearly 60 per cent. of the total output. It should be stated that only half a dozen return 50 per cent. or over, and that the majority favor 30 to 35 per cent. Looking at the fact that this advance has been effected without any complaint on the part of the consumers, and with no appreciable increase of fatal or other accidents, what becomes of the carbonic oxide bogey, or the need of limitation by Act of Parliament, which has from time to time been very strongly urged. If 50, 55 or 58 per cent. of water gas can be sent out with safety—and the returns afford actual evidence that it can, where is the need for a 12 or 16 per cent. carbonic oxide limit. About 170 undertakings own to the soft impeachment of using other materials in addition to coal, the other materials, for the most part, consisting of hydrocarbon fluids. One concern only, and that a small one, uses calcium carbide for the production of acetylene gas. The coal industry has not suffered by the inroad of water gas, but like the other items the consumption of coal shows a steady progress. The quantity carbonized has advanced from 12½ million tons in 1897 to 15 million in 1906. The gross receipts show a very substantial increase and now amount to 28 million sterling, while the profits, which are the most important part, follow a corresponding ratio. Altogether the whole report may be regarded with satisfaction by those who have invested their patrimony or their training and ability—often the more valuable asset of the two—in the gas industry.

The position is fully substantiated by the reports and statements of accounts for the year ended June 30th last. Notwithstanding bad trade, and an unusually fine, light summer, advancing sales of full dividends are the general experience. The difference in consumption on a fine bright evening, as compared with a dull cloudy one which expedited the lighting up time by an hour or more, is quite as pronounced as ever, showing that the leading feature is still gas for lighting, notwithstanding the remarkable advancements in other directions. Possibly hard times may tend to the benefit of gas undertakings as accelerating attention to what is not only the best, but also the cheapest method. The lighting season just commencing is marked by the introduction of several improvements and promises well for a continuation of progress in incandescent gas lighting, which has been a marked feature for many years.

Items of Interest
FROM VARIOUS LOCALITIES.

At the annual meeting of the Worcester (Mass.) Gas Light Company the reports submitted gave excellent evidence that the Company's year had been a prosperous one, the sendout for the twelvemonth exceeding that for 1906-07 by 11 per cent. The total output for the year was 529,531,000 cubic feet. The total receipts were $482,306.67 and the expenditures amounted to $247,669.13. The Directors declared the usual quarterly dividend of 2 per cent., payable the 1st prox. During July an extra dividend of 3 per cent. was declared, the total return for the year therefore being equal to 11 per cent. It was voted to issue the 2,000 shares of stock, which new capital had received the assent of the Board of Gas and Electric Light Commissioners, the call for the subscription payment on first account to be made some time prior to October 16; the second and final payment to be made not later than January. A large part of the moneys received on this account will be used to pay for the extensive enlargements now underway on the generating plant—perhaps complete new construction would be better. This, when completed, and it is expected that it will be in readiness for firing up in November, will be as well appointed a retort house as there is in operation wherever gas is made. The project for equipping a place for the charging of balloons with gas, on public or private account, was negatived on the recommendation of President Lamson. The officers elected were: Directors, Thos. B. Eaton, S. B. Woodward, Chas. D. Lamson, A. G. Bullock, F. H. Dewey and Albert Wood; President, Chas. D. Lamson; Treasurer and Clerk, James P. Hamilton.

Supreme Court Justice Benton decided unfavorably the petition of certain residents of Seneca Falls, N. .Y, who prayed that a mandatory injunction issue against the Inter-Urban Gas Company estopping it from charging a higher rate than $1.25 per 1,000 cubic feet. Plaintiff also asked that the franchise granted the Company in 1903 be revoked. The Court denied both prayers.

"L. V. M.," writing from Newark, N. J., under date of the 19th inst., says: "The dispute between the gas division of the Public Service Corporation, of New Jersey, and the Newark Board of Public Works, has been adjusted. The contention was over the contract for public lighting in Newark, in so far as that is done by means of gas lamps. The new contract, which was drawn up to cover the period of 5 years from March 1, 1908, was held up for some time, through a difference over rates. The prior contract—it expired January 1, 1908—was for $19 per lamp, and the new contract (finally agreed upon at $18 per lamp) did not become actually operative until March 1st. The city insisted that the new contract should be at $18 per lamp, which rate should prevail from January 1, 1908, whereas the Company insisted that the $18 rate did not become binding at the reduced figure until March. The Company finally acceded to the city's interpretation. Several thousand lamps were involved in the rating.

THE plant at Beaver Dam, Wis., is being completed under "rush" orders, and it is confidently asserted that gas will be turned on by November 1st. Our informant adds: "This will be accomplished only through the most positive sort of hustling."

IT is said that the proprietors of the Chickasha (I. T.) Gas Company have found it necessary to increase their generating capacity to 350,000 cubic feet per day (its capacity is at present 100,000), and to put down about 6 miles additional distributing mains, such have been the demands of the residents upon the Company's resources. It is calculated that the work on all accounts will be completed by November 1st.

MANAGER NEVINS, of the Haverhill (Mass.) Gas Light Company, reports the completion of the extension of its main system through the Bradford district.

THE proprietors of the Huntington (Ind.) Light and Fuel Company have ordered a concession of 25 cents per 1,000 in the selling rate, making a new net rate of $1 per 1,000.

As a result of some superficial investigation of the business methods of the Baltimore Consolidated Gas and Electric Company, with particular reference to the supply of electric currents, the Grand Jury, which was convened in Baltimore for the fall term, reports it (the Company) is "taking a mean advantage of its opportunities." Having asserted that the service is poor and that the rates are excessive, the following recommendation (among others) is handed down in the presentment: "That all public service corporations in this city should be under the control of a paid commission, whose business it should be to see to it that such charges for service be not only adequate—that is, they should be fair and reasonable—but such a commission should also see to it that the service it renders is full, adequate, prompt and reasonable. This would prevent competitors for a time from entering the field, only later to be absorbed, as in the case now being considered of the merger of the Maryland Company with the older corporation, for the experience in all cities is, with these public service corporations, that after a time they combine and form a monopoly at the expense of and to the detriment of the public."

PUBLIC advices from Chicago, by way of Philadelphia, dated the 19th inst., are to this effect: "The gain of 8,118 in the number of arc lights installed by the Peoples Gas Light and Coke Company since the first of the year, which is only slightly under the average gain in 1907, is taken as positive proof that gas for street lighting is rather more than holding its own. The gas arc lighting business of the Company was started in 1903, in which year 28,447 lamps of that type were put in service; September 15th last, 68,960 of them were placed. The sales by the Company of gas appliances for cooking, power and heating purposes are at least keeping pace with the output of arcs. So also is it with the placing of additional meters.

"V. W. T.," writing from Jacksonville, Fla., under date of the 13th inst., incloses the following: "The Jacksonville (Fla.) Gas Company has arranged with Mrs. Zora B. Plumber, a colored graduate in domestic science, of the Armour Institute, Chicago, Ills., to give a series of cooking lessons demonstrating the use of gas for household purposes. These lessons will comprise instructions in domestic science, the preparation of food on the gas range, and the safe and economical use of gas. The listings of the lessons were as follows: Ebenezer M. E. Church, one week, 14th to 19th. Mount Zion A. M. E. Church, one week, 21st to 26th. Bethel Baptist Institutional Church, one week, 28th to October 3d. Odd Fellows Hall, corner Florida avenue and Odessa street, one week, October 5th to 11th. The main purposes of these lessons are: First, to instruct the colored housewives in the proper use of gas; second, to instruct anyone who may desire to learn how to operate a gas range in order that she may become better fitted for employment in homes where gas is used. These lessons will be absolutely free and will be held from 2 to 5 P.M. daily at churches and hall at dates above mentioned. Prizes will be offered by the Gas Company for the best loaf of bread and best cake baked on a gas range. Souvenirs will be given away at each lesson. All colored housewives were cordially invited to attend the demonstrations."

THE new installation of plant by the Montgomery (Ala.) Light and Water Power Company, as arranged by the General Manager, R. J. Chambers, includes the placing of 2 new benches of 6's, an exhauster and greatly improved facilities for unloading coal, loading coke, etc.

THE Beatrice (Neb.) Gas and Power Company has awarded to the Gas Machinery Company, of Cleveland, O., the contract for a 4-foot water gas set, to be completed at the earliest possible date. The "rush" nature of this job was, singular to relate, made necessary by the remarkable increase in the sendout consequent upon the completion of its coal gas plant, July, 1907. This result was largely brought about by the energy of the Company's Manager, Mr. R. B. Kyd, who kept putting consumers on the lines until without much warning the capacity of the plant was all but overtaxed.

THE feature of the 19th inst., in the business life of Ludington, Mich., was a public reception, given at and in its handsome quarters by the Ludington Gas Company, organized in 1905, by State Senator Andrew Fyfe and Mr. H. M. Wallace. The works were built and gas was sent out in 1907, and the progress of the Company since has been most gratifying to its owners, and reflects much credit on the cleverness of its Manager, Mr. W. F. Doelker. The sendout now approximates 12,000,000 cubic feet per annum, and its main system measures 11½ miles. Its officers are: President, C. M. Remington; Vice-President, Andrew Fyfe; Treasurer, H. Adgit; Secretary, Chas. Coyer.

MR. P. E. CROWL, who has charge of the Galeton-Eldred (Pa.) gas and water plants, has assumed charge as Manager of the Consolidated Water Company, of Coudersport, Pa.

MR. B. F. BABBITT has been appointed Receiver for the properties of the Choctaw (Okla.) Gas Light, Heat and Power Company, of South McAlaster, Okla. The action for a receivership was brought by Mr. W. H. Sterrett, who based his application that a misuse of funds was traceable to the management, such misuse amounting specifically to $14,940.

"THE members of the special committee of the City Council, of New Bedford, Mass., charged with the task of determining whether or not it would be advisable to engage the city in the operation of a gas and electric lighting plant, have rendered a report in the negative. The finding was unanimous.—L. T."

MR. CUSTER L. FARNSWORTH has been appointed foreman of the construction division of the electrical department of the Fitchburg (Mass.) Gas and Electric Light Company. The chief of that department of the Fitchburg Company is Mr. C. R. Hayes.

"J. S. M.," writing from London, Ont., under date of the 19th inst., says—Dear JOURNAL: Occasionally I have a word or two for you, but, from one or another cause, something turned up that brought delay. This time, however, so there shall be no taking by the thief of time this day, I here forward some account of the showing that gas, as handled by our City Gas Company, made at the annual London, Ont., Fair: "One thing which stands out as a marked improvement at the Fair this year, and is probably the first thing noticed by those who visit the grounds and buildings at night, is the improved lighting. It is indeed a brilliant scene at the grounds, the many Welsbach gas lamps, installed by and under the direction of the City Gas Company, revealing everything quite as clearly as they could be seen during daylight hours. The main building has some 58 of these lights, each with the brilliancy of 400 candles, and they light up the building as never before. It has been said that these lights tend almost to spoil the artistic effect of the building, as with them there is no need for the exhibitors hanging their booths with lights, as was done in the past in order to reveal their exhibits to the best advantage. In some of the booths, however, different styles of gas lighting are to be seen, as in the Heintzman piano exhibit, where the Welsbach Harplight, suitable for parlor illumination; sheds a subdued light, which is extremely pleasing through the ruby shades. Many of the other buildings are lighted by gas, as are also the grounds, some 125 of the 400-candle power lights in all being on the ground. One of the best exhibits in the main building is the booth occupied by the City Gas Company. This is fitted up as a model kitchen and dining room, and here the various uses to which gas can be put to make housekeeping less arduous and more economical are shown. There in the kitchen is one of McClary's Caloric gas ranges, and upon this different dishes are being constantly prepared, and coffee and tea made. In connection with this range is a detachable circulating heater illustrating how, by the use of gas, as much water only as is desired may be heated at the rate of 1 gallon for every minute that the gas is burning, illustrating clearly the economy of this means of heating. Throughout the grounds this gas is being practically used for these purposes, nearly all the restaurants using it for cooking, heating, water and lighting, while in the kitchen of the directors' building one of these gas ranges is to be seen in operation. The booth of the Gas Company naturally is lighted up with many gas jets, and it is thus made one of the brightest places on the ground, and one in which everything can be seen clearly, and where courteous attendants readily answer any questions which may interest those taking in the exhibit. Another use that is made of the gas is to give power to drive engines. This year there is only one engine given motive power by gas, simply because the Company was not asked for the gas in time, so that they were unable to pipe it to the grounds in sufficient quantities. They have added a great deal of piping this year, but more will be needed before another year, owing to the greatly increased demand for this commodity. The gas engine which is in operation in the McClary exhibit illustrates clearly this wonderful power which is so mighty and yet cheap, and will well repay a careful inspection. The coke exhibit of the Company is another feature of interest. A team of goats drawing a miniature cart filled with this fuel, which, ton for ton, contains as many heat units as coal, yet which is much cheaper, about the grounds."

THE AMERICAN GAS LIGHT JOURNAL

The Market for Gas Securities.

The display of fireworks in respect of quotations for Consolidated was decidedly of the best type of Pain's best. The stock broke 140 and then mounted to the figure of last week. At the opening to-day (Friday) it was 145 bid. Remember, all this sky rocketting was witnessed in 6 days. There was no good reason for a lowering in price; there was much good reason for an increase in it. Meanwhile we may softly note that quite a considerable short line was put out. Watch these stray one's skurry to cover, about the end of October.

Brooklyn Union is very strong. We do not put much faith in the speculation regarding this Company going over to the Astoria Light and Power Company—that is, as a first step. It might be well to look to a possible amalgamation with the Brooklyn electric concerns; then come what may! It need not require a wizard to divine that Consolidated gas is very cheap at current figures under these circumstances. The general market is strong.

Gas Stocks.

Quotations by George W. Close, Broker and Dealer in Gas Stocks.

16 WALL STREET, NEW YORK CITY.

SEPTEMBER 28.

☞ All communications will receive particular attention.

☞ The following quotations are based on the par value of $100 per share:

N. Y. City Companies.	*Capital.*	*Par.*	*Bid.*	*Asked.*
Consolidated Gas Co.	$73,177,000	100	145	145½
Central Union Gas Co.—1st 5's, due 1972, J. & J.	3,000,000	1,000	93	93¼
Equitable Gas Light Co.—Con. 5's, due 1932, M. & S.	1,000,000	1,000	—	105
Mutual Gas Co.	3,500,000	100	130	160
New Amsterdam Gas Co.—1st Con. 5's, due 1948, J. & J.	11,000,000	1,000	92	96
New York & Richmond Gas Co. (Staten Island)	1,500,000	100	37	43
1st Mtg. Gold Bds. 5 p. ct.	1,000,000	—	98	104
New York and East River—1st 5's, due 1944, J. & J.	3,500,000	1,000	100	105
Con. 5's, due 1945, J. & J.	1,500,000	—	97	101
Northern Union—1st 5's, due 1927, J. & J.	1,250,000	1,000	90	98
Standard	5,000,000	100	70	100
Preferred	5,000,000	100	100	125
1st Mtg. 5's, due 1900, M. & N.	1,500,000	1,000	100	105
The Brooklyn Union	15,000,000	1,000	138	140
1st Con. 5's, due 1948, M. & N.	15,000,000	—	91½	92
Yonkers	299,650	500	130	—
Out-of-Town Companies.				
Bay State	50,000,000	50	2¼	2½
" Income Bonds	2,000,000	1,000	—	75
Binghampton Gas Works	450,000	100	—	65
" 1st Mtg. 5's	500,000	1,000	95	100
Boston United Gas Co.—1st Series S. F. Trust	7,000,000	1,000	82	85
2d " " "	3,000,000	1,000	47½	50
Buffalo City Gas Co.	5,500,000	100	5	8
" " Bonds, 5's	5,250,000	1,000	63	68
Capital, Sacramento	500,000	50	—	35
Bonds (6's)	150,000	1,000	—	—
Chicago Gas Co. Guaranteed Gold Bonds	7,000,000	1,000	104	104¼
Cincinnati Gas and Electric Co.	29,500,000	100	90½	91
Columbus (O.) Gas Co., 1st Mortgage Bonds	1,500,000	1,000	92	98
Columbus (O.) Gas Lt. & Heating Co.	1,682,750	100	90½	91
Preferred	3,026,500	100	71	80
Consumers, Toronto	2,000,000	50	200	204
Consolidated, Baltimore	11,000,000	100	—	105
Mortgages, 6's	3,600,000	—	—	118
Chesapeake, 1st 6's	1,000,000	—	—	—
Equitable, 1st 6's	910,000	—	—	—
Consolidated, 1st 5's	1,490,000	—	—	112
Consolidated Gas Co. of N. J.	1,000,000	100	15	17
Con. Mtg. 5's	880,000	1,000	92	95
Bonds	75,000	—	—	100
Denver Gas and Electric	—	—	74½	77
Detroit City Gas Co	6,000,000	50	—	50
" Prior Lien 5's	4,618,000	1,000	—	98
Detroit Gas Co., 5's	381,000	1,000	75	80
" Inc. 5's	16,000	100	98½	100
Equitable Gas & Fuel Co., Chicago, Bonds	2,000,000	1,000	—	101
Essex and Hudson Gas Co.	6,500,000	—	39	40
Fort Wayne	2,000,000	—	—	—
" Bonds	2,000,000	—	55	—
Grand Rapids Gas Light Co., 1st Mtg. 5's	1,225,000	1,000	104½	105
Hartford	750,000	25	199	200
Hudson County Gas Co., of New Jersey	10,500,000	—	100	105
" Bonds, 5's	10,500,000	—	101	102½
Indianapolis	2,000,000	—	60	70
" Bonds, 5's	2,650,000	—	104½	105
Jackson Gas Co.	250,000	50	82	—
" 1st Mtg. 5's	290,000	1,000	97	100
Kansas City Gas Light Co., of Missouri	5,000,000	100	—	36
Bonds, 1st 5's	3,822,000	1,000	102	104
Laclede Gas Co., St. Louis.	10,000,000	100	—	100
Preferred	2,500,000	100	60	90
Bonds	10,000,000	1,000	104	104¼
Lafayette Gas Co., Ind.	1,000,000	100	—	60
Bonds	1,000,000	1,000	60	65
Louisville	2,570,000	50	143	145
Madison Gas and Electric Co.				
" 1st Mtg. 6's	350,000	1,000	106	108¾
" 6 per cent. scrip, due 1910	100,000	25	60	60½
Massachusetts Gas Companies, of Boston	25,000,000	100	55	55¼
Preferred	25,000,000	100	86¼	86⅜
Montreal Gas Co., Canada	2,000,000	100	218	218¾
Nashville Gas Light Co.	1,000,000	100	110	—
Newark, N. J., Con. Gas Co.	6,000,000	—	56	58
Bonds, 6's	6,000,000	—	137	138
New Haven Gas Co.	2,000,000	25	200	—
Peoples Gas Lt. & Coke Co., Chicago	25,000,000	100	94	94½
1st Mortgage	20,100,000	1,000	—	—
2d "	2,500,000	1,000	104	—
Rochester Gas & Electric Co.	2,170,000	50	88	—
Preferred	2,150,000	50	118	—
Consolidated 5's	2,000,000	—	104¾	105½
San Francisco Gas Co., Cal.	15,500,000	—	—	—
St. Joseph Gas Co.—1st Mtg. 5's	751,000	1,000	92	—
St. Paul Gas Light Co.	1,500,000	100	45	47
1st Mortgages, 6's	650,000	1,000	113	116
Extension, 6's	600,000	1,000	112½	115
General Mortgage, 5's	2,465,000	1,000	96¼	—
Syracuse Gas Co., N. Y.	1,975,000	100	50	55
Bonds	2,047,000	1,000	102	—

Advertisers' Index.

GAS ENGINEERS. Page

Bartlett, Hayward & Co., Baltimore, Md. ... 565
Cruse-Kemper Co., Philadelphia, Pa. ... 552
Davis & Farnum Mfg. Co., Waltham, Mass. ... 564
Economical Gas Apparatus Construc. Co., Toronto, Ont. 563
Frank D. Moses, Trenton, N. J. ... 566
Frederic Egner, Norfolk, Va. ... 568
Frederick J. Mayer, New York City ... 549
H. M. Byllesby & Co., Chicago, Ills. ... 561
Humphreys & Glasgow, New York City ... 564
Improved Equipment Company, New York City ... 550
Isbell-Porter Co., Newark, N. J. ... 553
Kerr Murray Mfg. Co., Fort Wayne, Ind. ... 565
The Gas Machinery Co., Cleveland, O. ... 548
The Jeffrey Manufacturing Co., Columbus, O. ... 562
United Gas Improvement Co., Philadelphia, Pa. ... 559
Western Gas Construction Co., Fort Wayne, Ind. ... 572

GAS WORKS APPARATUS AND CONSTRUCTION.

Bartlett, Hayward & Co., Baltimore, Md. ... 565
Connelly Iron Sponge & Governor Co., New York City. 561
Continental Iron Works, Brooklyn, N. Y. ... 566
Cruse-Kemper Co., Philadelphia, Pa. ... 552
Davis & Farnum Mfg. Co., Waltham, Mass. ... 564
Deily & Fowler Mfg. Co., Philadelphia, Pa. ... 568
Economical Gas Apparatus Construc. Co., Toronto, Ont. 563
Frank D. Moses, Trenton, N. J. ... 566
Humphreys & Glasgow, New York City ... 564
Improved Equipment Company, New York City ... 550
Isbell-Porter Co., New York City ... 552
Kerr Murray Mfg. Co., Fort Wayne, Ind. ... 565
Lloyd Construction Co., Detroit, Mich. ... 554
Logan Iron Works, Brooklyn, N. Y. ... 568
Quintard Iron Works, New York City ... 553
R. D. Wood & Co., Philadelphia, Pa. ... 566
Riter-Conley Mfg. Co., Pittsburgh, Pa. ... 551
Stacey Mfg. Co., Cincinnati, O. ... 567
The Gas Machinery Co., Cleveland, O. ... 548
The Jeffrey Mauufacturing Co., Columbus, O. ... 562
United Gas Improvement Co., Philadelphia, Pa. ... 559
Western Gas Construction Co., Fort Wayne, Ind. ... 572

PROCESSES.

Bartlett, Hayward & Co., Baltimore, Md. ... 565
Economical Gas Apparatus Construc. Co., Toronto, Ont. 563
Humphreys & Glasgow, New York City. ... 564
Improved Equipment Company, New York City ... 550
Semet-Solvay Co., Syracuse, N. Y. ... 562
The Gas Machinery Co., Cleveland, O. ... 548
United Gas Improvement Co., Philadelphia, Pa. ... 559
Western Gas Construction Co., Fort Wayne, Ind. ... 572

SCRUBBERS AND CONDENSERS.

Bartlett, Hayward & Co., Baltimore, Md. ... 565
Continental Iron Works, Brooklyn, N. Y. ... 566
Cruse-Kemper Co., Philadelphia, Pa. ... 552
Davis & Farnum Mfg. Co., Waltham, Mass. ... 564
Economical Gas Apparatus Construc. Co. Toronto, Ont. 563
Isbell-Porter Co., Newark, N. J. ... 552
Kerr Murray Mfg. Co., Fort Wayne, Ind. ... 565
Logan Iron Works, Brooklyn, N. Y. ... 568
R. D. Wood & Co., Philadelphia, Pa. ... 566
Riter-Conley Mfg. Co., Pittsburgh, Pa. ... 551
Stacey Mfg. Co., Cincinnati, O. ... 567
The Gas Machinery Co., Cleveland, O. ... 548
Western Gas Construction Co., Fort Wayne, Ind. ... 572

PRODUCER POWER PLANTS.

Economical Gas Apparatus Construc. Co., Toronto, Ont. 563
R. D. Wood & Co., Philadelphia, Pa. ... 566

TAR AND CARBONIC ACID EXTRACTOR.

Bartlett, Hayward & Co., Baltimore, Md. ... 565
Economical Gas Apparatus Construc. Co., Toronto, Ont. 563
Isbell-Porter Co., Newark, N. J. ... 552
Kerr Murray Mfg. Co., Fort Wayne, Ind. ... 565
Stacey Mfg. Co., Cincinnati, O. ... 567
The Gas Machinery Co., Cleveland, O. ... 548
Western Gas Construction Co., Fort Wayne, Ind. ... 572

AMMONIA CONCENTRATORS.

Bartlett, Hayward & Co., Baltimore, Md. ... 565
Michigan Ammonia Works, Detroit, Mich. ... 545
The Gas Machinery Co., Cleveland, O. ... 548
Western Gas Construction Co., Fort Wayne, Ind. ... 572

GAS METERS.

American Meter Co., New York and Philadelphia. ... 571
D. McDonald & Co., Albany, N. Y. ... 569
Helme & McIlhenny, Philadelphia, Pa. ... 571
John J. Griffin & Co., Philadelphia, Pa. ... 528
Keystone Meter Co., Royersford, Pa. ... 570
Maryland Meter and Mfg. Co., Baltimore, Md. ... 570
Metric Metal Co., Erie, Pa. ... 571
Nathaniel Tufts Meter Co., Boston, Mass. ... 570
New York Improved Meter Co., New York City. ... 570
Pittsburg Meter Co., East Pittsburg, Pa. ... 569
Rotary Meter Co., New York City. ... 547
Sprague Meter Co., Bridgeport, Conn. ... 566
United States Meter Co., Brooklyn, N. Y. ... 571

PREPAYMENT METERS.

American Meter Co., New York and Philadelphia. ... 571
D. McDonald & Co., Albany, N. Y. ... 569
Helme & McIlhenny, Philadelphia, Pa. ... 571
John J. Griffin & Co., Philadelphia, Pa. ... 528
Keystone Meter Co., Royersford, Pa. ... 570
Nathaniel Tufts Meter Co., Boston, Mass. ... 570
New York Improved Meter Co., New York City. ... 569
Pittsburg Meter Co., East Pittsburg, Pa. ... 569
Sprague Meter Co., Bridgeport, Conn. ... 566

PREPAYMENT METER ATTACHMENTS.

New York Improved Meter Co., New York City. ... 570

WATER METERS.

Pittsburg Meter Co., East Pittsburg, Pa. ... 569

GAS AND WATER PIPES.

Davis & Farnum Mfg. Co., Waltham, Mass. ... 564
Donaldson Iron Co., Emaus, Pa. ... 566
Economical Gas Apparatus Construc. Co., Toronto, Ont. 563
R. D. Wood & Co., Philadelphia, Pa. ... 566

GAS COALS.

Berwind-White Coal Mining Co., New York and Phila. 562
Perkins Co., New York City. ... 562
Westmoreland Gas Coal Co., Philadelphia, Pa. ... 561

GAS MAIN STOPPERS.

Edward A. Behringer, New York City. ... 562
Safety Gas Main Stopper Co., New York City. ... 561

MAIN AND SERVICE LAYING.

Sullivan Bros., Flushing, N. Y. ... 563

GAS TAPPING MACHINES.

George Light, Dayton, O. ... 563
H. Mueller Manufacturing Co. Decatur, Ills. ... 554

CANNEL COALS.

Perkins & Co., New York City. ... 554

STOKING MACHINERY.

G. A. Bronder, New York City. ... 562

CONVEYORS—ALL KINDS.

Bartlett, Hayward & Co., Baltimore, Md..... 565
Brown Hoisting Machinery Co., Cleveland, O..... 554
Cruse-Kemper Co., Philadelphia, Pa..... 552
C. W. Hunt Company, New York City..... 564
Economical Gas Apparatus Construc. Co., Toronto, Ont. 563
G. A. Bronder, New York City..... 561
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 565
The Gas Machinery Co., Cleveland, O..... 548
The Jeffrey Manufacturing Co., Columbus, O..... 562
Western Gas Construction Co., Fort Wayne, Ind..... 572

CHARGING BARROWS & COAL WAGONS.

Davis & Farnum Mfg. Co., Waltham, Mass..... 564
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 565
Stacey Mfg. Co., Cincinnati, O..... 567

GAS ENRICHERS.

Standard Oil Co., New York City..... 563

COKE CRUSHERS.

Bartlett, Hayward & Co., Baltimore, Md..... 565
C. M. Keller, Columbus, Ind..... 563
The Jeffrey Manufacturing Co., Columbus, O..... 562

GAS METER CONNECTIONS.

H. Mueller Manufacturing Co., Decatur, Ills..... 554

GAS COCKS.

H. Mueller Manufacturing Co., Decatur, Ills..... 554

GAS GAUGES.

The Bristol Co., Waterbury, Conn..... 555

GAS GOVERNORS.

Chaplin-Fulton Mfg. Co., Pittsburg, Pa..... 567
Connelly Iron Sponge & Governor Co., New York City. 561
Isbell-Porter Co., Newark, N. J..... 552
Pittsburg Meter Co., East Pittsburg, Pa..... 565
R. D. Wood & Co., Philadelphia, Pa..... 566
Reynolds Gas Regulator Co., Anderson, Ind..... 561

CEMENTS.

C. L. Gerould, Pittsburgh, Pa..... 556

RETORTS AND FIREBRICKS.

Baltimore Retort and Firebrick Co., Baltimore, Md... 560
Didier-March Co., New York City..... 549
Gas Bench Construction Co., St. Louis, Mo..... 560
Henry Maurer & Son, New York City..... 553
Improved Equipment Company, New York City..... 550
James Gardner, Jr., Co., Bolivar, Pa..... 562
J. H. Gautier & Co., Jersey City, N. J..... 560
Laclede-Christy Clay Products Co., St. Louis, Mo..... 552
Missouri Firebrick Co., St. Louis, Mo..... 560
Parker-Russell Mining and Mfg. Co., St. Louis, Mo.... 550

INCLINED RETORTS.

Baltimore Retort and Firebrick Co., Baltimore, Md... 560
Didier-March Co., New York City..... 549
Gas Bench Construction Co., St. Louis, Mo..... 560
Improved Equipment Company, New York City..... 550
Laclede-Christy Clay Products Co., St. Louis, Mo..... 552
Parker-Russell Mining and Mfg. Co., St. Louis, Mo... 550

VERTICAL S'S.

Connelly Iron Sponge & Gov. Co. (Drake's [Eng.] System) 561
Didier-March Co., New York City..... 549
Gas Bench Construction Co., St. Louis, Mo..... 560
Improved Equipment Company, New York City..... 550
Laclede-Christy Clay Products Co., St. Louis, Mo..... 552
Parker-Russell Mining and Mfg. Co., St. Louis, Mo... 550

REGENERATIVE FURNACES.

Baltimore Retort and Firebrick Co., Baltimore, Md.. 560
Bartlett, Hayward & Co., Baltimore, Md..... 565
Didier-March Co., New York City..... 549
Gas Bench Construction Co., St. Louis, Mo..... 560
Improved Equipment Company, New York City..... 550
J. H. Gautier & Co., Jersey City, N. J..... 560
Laclede-Christy Clay Products Co., St. Louis, Mo..... 552
Missouri Firebrick Co., St. Louis, Mo..... 560
Parker-Russell Mining and Mfg. Co., St. Louis, Mo... 550

SELF-SEALING MOUTHPIECE DOORS.

Bartlett, Hayward & Co., Baltimore, Md..... 565
Continental Iron Works, Brooklyn, N. Y..... 566
Davis & Farnum Mfg. Co., Waltham, Mass..... 564
Isbell-Porter Co., Newark, N. J..... 552
Improved Equipment Company, New York City..... 550
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 565
Logan Iron Works, Brooklyn, N. Y..... 568
R. D. Wood & Co., Philadelphia, Pa..... 566
Stacey Mfg. Co., Cincinnati, O..... 567
The Gas Machinery Co., Cleveland, O..... 548
Western Gas Construction Co., Fort Wayne, Ind..... 572

INCANDESCENT GAS LAMPS.

General Gas Light Co., Kalamazoo, Mich..... 555
Welsbach Company, Gloucester, N. J..... 558

BURNERS.

Wm. M. Crane Co., New York City..... 559

STREET LAMPS.

Thos. T. W. Miner, New York City..... 554
Welsbach Street Lighting Co., New York and Phila.. 558

DRILLS—ROCK AND STONE.

The Jeffrey Manufacturing Co., Columbus, O..... 562

PULVERIZERS.

The Jeffrey Manufacturing Co., Columbus, O..... 562

PURIFIERS.

Bartlett, Hayward & Co., Baltimore, Md..... 565
Connelly Iron Sponge & Governor Co., New York City. 561
Cruse-Kemper Co., Philadelphia, Pa..... 552
Davis & Farnum Mfg. Co.. Waltham, Mass..... 564
Isbell-Porter Co., Newark, N. J..... 552
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 565
R. D. Wood & Co., Philadelphia, Pa..... 566
Stacey Mfg. Co., Cincinnati, O..... 567
Western Gas Construction Co., Fort Wayne, Ind.... 572

PURIFYING MATERIALS.

Connelly Iron Sponge & Governor Co., New York City 561

VALVES.

Bartlett, Hayward & Co., Baltimore, Md..... 565
Continental Iron Works, Brookln, N. Y..... 566
Davis & Farnum Mfg. Co., Waltham, Mass..... 564
Economical Gas Apparatus Construc. Co., Toronto, Ont. 563
Isbell-Porter Co., Newark, N. J..... 552
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 565
Ludlow Valve Manufacturing Co., Troy, N. Y..... 553
R. D. Wood & Co., Philadelphia, Pa..... 566
Stacey Mfg. Co., Cincinnati, O..... 567
The Gas Machinery Co , Cleveland, O..... 548
The P. H. & F. M. Roots Co., Connersville, Ind..... 555
Western Gas Construction Co., Fort Wayne, Ind..... 572

EXHAUSTERS.

Connelly Iron Sponge & Governor Co., New York City 561
Connersville Blower Company, Connersville, Ind..... 546
Davis & Farnum Mfg. Co., Waltham, Mass..... 564
Isbell-Porter Company, Newark, N. J..... 552
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 565
Piqua Blower Co., Piqua, O..... 553
The P. H. & F. M. Roots Co., Connersville, Ind..... 555

PURIFIER AND SCRUBBER TRAYS.

Bartlett, Hayward & Co., Baltimore, Md..... 565
Cabot Mfg. Co., Hoboken, N. J..... 563
Western Gas Construction Co., Fort Wayne, Ind..... 572

GAS STOVES.

American Meter Co., New York and Philadelphia..... 561
Keystone Meter Co., Royersford, Pa..... 571
Maryland Meter & Manufacturing Co., Baltimore, Md... 570
Nathaniel Tufts Meter Co., Boston, Mass..... 570

HOT WATER HEATERS.

Humphrey Co., Kalamazoo, Mich..... 554

GASHOLDERS.

Bartlett, Hayward & Co., Baltimore, Md..... 565
Continental Iron Works, Brooklyn, N. Y..... 566
Cruse-Kemper Co., Philadelphia, Pa..... 552
Davis & Farnum Mfg. Co., Waltham, Mass..... 564
Deily & Fowler Mfg. Co., Philadelphia, Pa..... 568
Economical Gas Apparatus Construc. Co., Toronto, Ont. 563
Kerr Murray Mfg. Co., Fort Wayne, Ind..... 565
Logan Iron Works, Brooklyn, N. Y..... 568
R. D. Wood & Co., Philadelphia, Pa..... 566
Riter-Conley Mfg. Co., Pittsburgh, Pa..... 551
Stacey Mfg. Co., Cincinnati, O..... 567
Western Gas Construction Co., Fort Wayne, Ind..... 572

STORAGE TANKS.

Bartlett, Hayward & Co., Baltimore, Md..... 565
Davis & Farnum Mfg. Co., Waltham, Mass..... 564
Stacey Mfg. Co., Cincinnati, O..... 567
Western Gas Construction Co., Fort Wayne, Ind..... 572

PATENTS, TRADE-MARKS, COPYRIGHTS.

Royal E. Burnham, Washington, D. C..... 561

DIVIDEND NOTICE.

OFFICE OF THE UNITED GAS IMPROVEMENT CO.,
N. W. CORNER BROAD AND ARCH STS.,
PHILADELPHIA, PA., Sept. 9, 1908.

The Directors have this day declared a quarterly dividend of 2 per cent. (one dollar per share), payable Oct. 15th, 1908, to stockholders of record at the close of business, Sept. 30, 1908. Checks will be mailed.

1736-5 LEWIS LILLIE, Treasurer.

WANTED, PERMANENT POSITION,

By young man, aged 30 years. Thoroughly experienced in coal gas manufacture and with special practical knowledge of up-to-date European and American carbonizing plants and methods. Used to the control of men. Steady, energetic and aggressive. At present employed, but desires change.

1738-1 Address, "R. A.," care this Journal.

Situation Wanted.

Young man, 30 years of age, and of 12 years' practical experience in gas manufacture and distribution, wishes situation as engineer or superintendent of a gas company where expert services are required and the output is at least 150,000 per day. Is graduate engineer and at present superintendent of one of the largest high pressure plants in the U. S. The best of references and experience only.

1737-2 Address, "S. R. U.," care this Journal.

MANAGER FOR GAS PROPERTY

Solicits Correspondence or Interview.

An experienced and competent manager and superintendent desires change from present position to one offering greater opportunities. Capable of handling gas property in manner to bring best results. Would not care to consider position in city of less than 20,000 population. Age 35; 15 years' experience. Is member of and will attend October meeting of Gas Institute. Solicits interview at that time.

Address, "MANAGER AND SUPERINTENDENT,"
1737-3 Care this Journal.

WANTED,

Managership or Superintendency

Of gas, or gas and electric, or gas, electric and water plant. Ten years' experience. Results in getting new business and handling public. Age 40 and married.

1738-1 Address, "L.," care this Journal.

Position Wanted

By a young married man as superintendent of manufacturing and distributing coal gas; 7 years' experience. Results guaranteed. Can furnish good references.

1738-2 Address, "C.," care this Journal.

FOR SALE,

A 40-HORSE POWER GAS ENGINE,

Nearly new and in excellent order.

Address, - - A. P. BROWNE,
1738-4 141 MILK ST., BOSTON, MASS.

FOR SALE,

SECOND-HAND GAS METERS.

904 . . . 3-Light.	4 . . . . 30-Light.
71 . . . 5-Light.	5 . . . . 45-Light.
22 . . 10-Light.	3 . . . 100-Light.
8 . . 20-Light.	1 . . . 300-Light.

SETH W. WARREN, RECEIVER,
No. 303 Chamber of Commerce Bldg.,
1738-1 BUFFALO, N. Y.

Utilize Your Gas Liquor.

NO EXTRA LABOR OR OPERATING EXPENSES.

IMPROVED AMMONIA CONCENTRATOR.

About 100 in use. Write to

STROH & OSIUS, Patentees, or
MICHIGAN AMMONIA WORKS, - Detroit, Mich.

STANDARD REDUCTION FACTORS for GASES,
By Helon Brooks MacFarland, B.S., M.M.E.
Price, $1.50. *For Sale by*
A. M. Callender & Co., 42 Pine St., New York City.

The Sprague Meter Co.

Manufacturers of

Cast Iron Gas Meters

for

Artificial or Natural Gas

Plain or Prepayment

Lower in first cost and cheaper to maintain than any meter on the market.

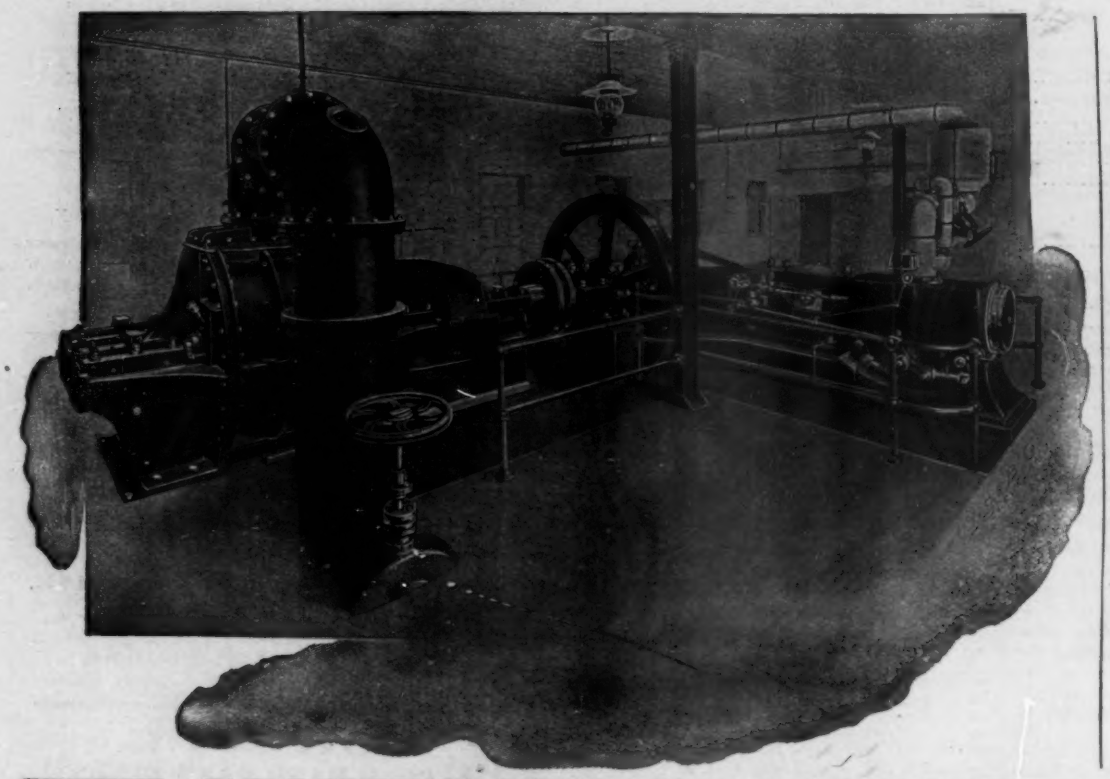
Write us for particulars.

The Sprague Meter Company

203 Water St., Bridgeport, Conn.

CONNERSVILLE GAS EXHAUSTERS

AND HIGH PRESSURE GAS PUMPS.



THIS cut shows one of our High Pressure machines and a 4-valve engine connected by one of our leather link flexible couplings. Two of these units were installed for the Peoples Gas Light and Coke Co., Chicago, at their 73d St. Station. Each machine has a capacity of 14,000,000 cubic feet per day.

———o———

We also manufacture

GAS VALVES,
BY-PASS VALVES,
PRESSURE REGULATORS,
ETC., ETC.

Correspondence Solicited.

THE CONNERSVILLE BLOWER COMPANY,
Connersville, Indiana, U. S. A.
NEW YORK OFFICE, 50 Church Street. - - HORACE G. COOKE, Selling Agent.

THE SEVENTH EDITION, ILLUSTRATED,

— OF THE —

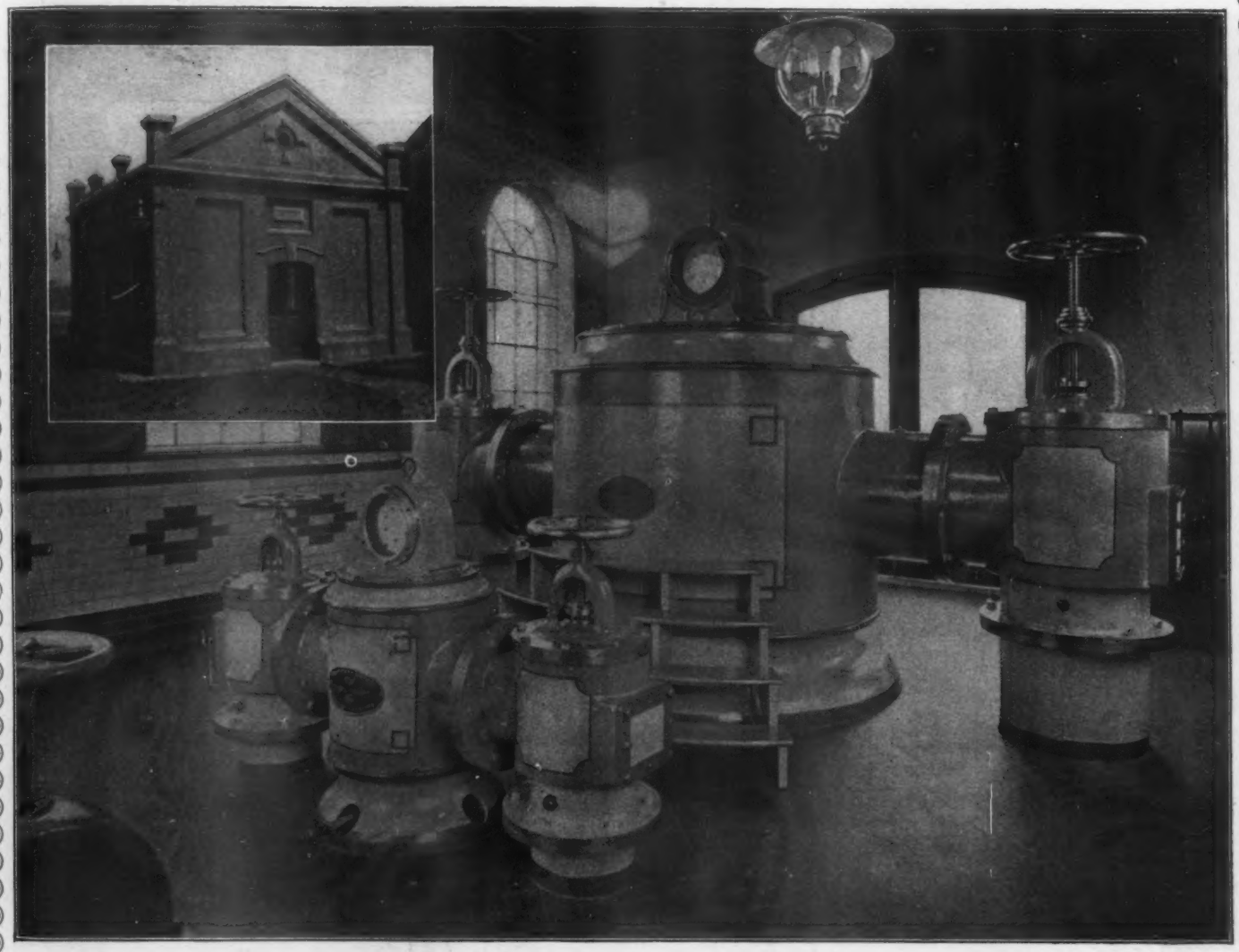
Handbook for Gas Engineers and Managers,

By THOMAS NEWBIGGING, M. INST. C.E.

This Edition of the "Handbook for Gas Engineers and Managers" is a great improvement on all previous editions. Much of the text has been re-written, in order to keep the work abreast of the constant advances that are being made in the Gas Industry.

PRICE, - $6.50.

A. M. CALLENDER & CO., 42 Pine Street, New York City.



View of Rotary Meter House, Croydon (England) Gas Works.

The Croydon Company first installed (1903) a small Rotary to measure air to purifiers. In 1904 a Rotary of 80,000 cubic feet per hour was set to measure water gas make. This latter machine has been in continuous service since it was installed.

In 1906 Mr. J. W. Helps, Engineer and General Manager of the Croydon Company, in view of the satisfactory service given by the above machines, determined to install two additional Rotaries—one of 180,000 cubic feet per hour and another of 25,000 cubic feet per hour. The above illustrations show the exterior of the house erected to accommodate these meters and the interior of the same. The smaller one takes care of the make when the send-out falls below the minimum of the larger machine.

ROTARY METER COMPANY

One-half the cost—One-tenth the space of old style wet meters.

When in need of Station Meters, write

ROTARY METER COMPANY,

280 Broadway,

NEW YORK.

Send for Catalog.

P. PLANTINGA, President W. E. STEINWEDELL, Secretary

THE GAS MACHINERY CO.,

Main Office and Shops

CLEVELAND, OHIO.

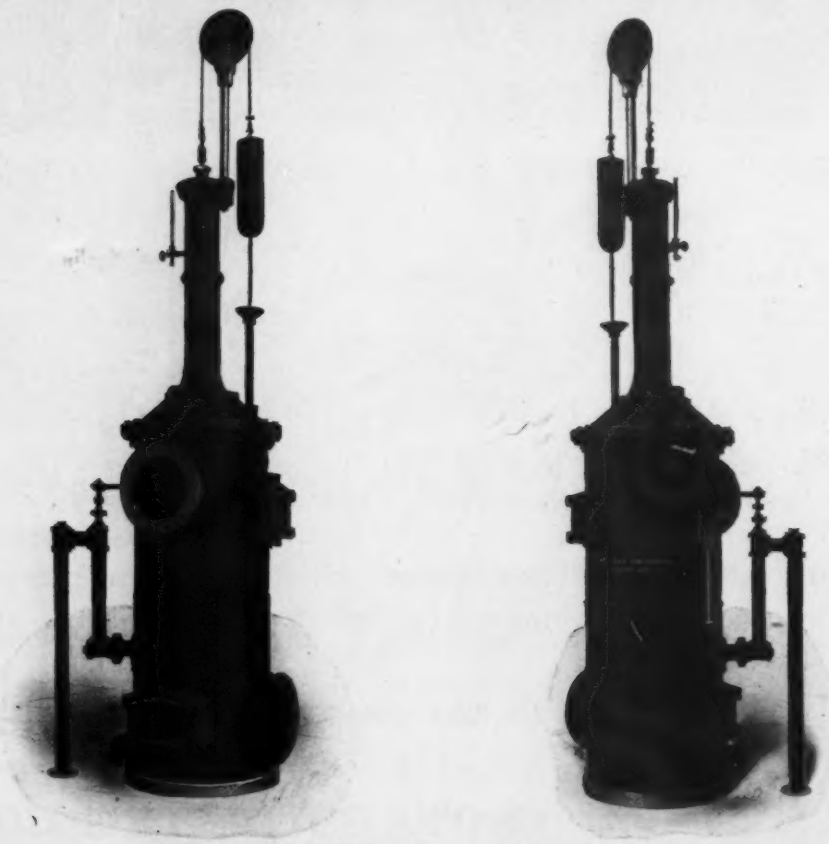
NEW YORK OFFICE, - - 56 PINE STREET.

COAL AND WATER GAS APPARATUS.

EXHAUSTERS, CONDENSERS, SCRUBBERS,
TAR EXTRACTORS, WASHERS, PURIFIERS,
VALVES, CONNECTIONS.

BY PRODUCT MACHINERY,
COMPLETE GAS PLANTS.

PACIFIC COAST AGENTS: Hallidie Machinery Co., Seattle, Wash.

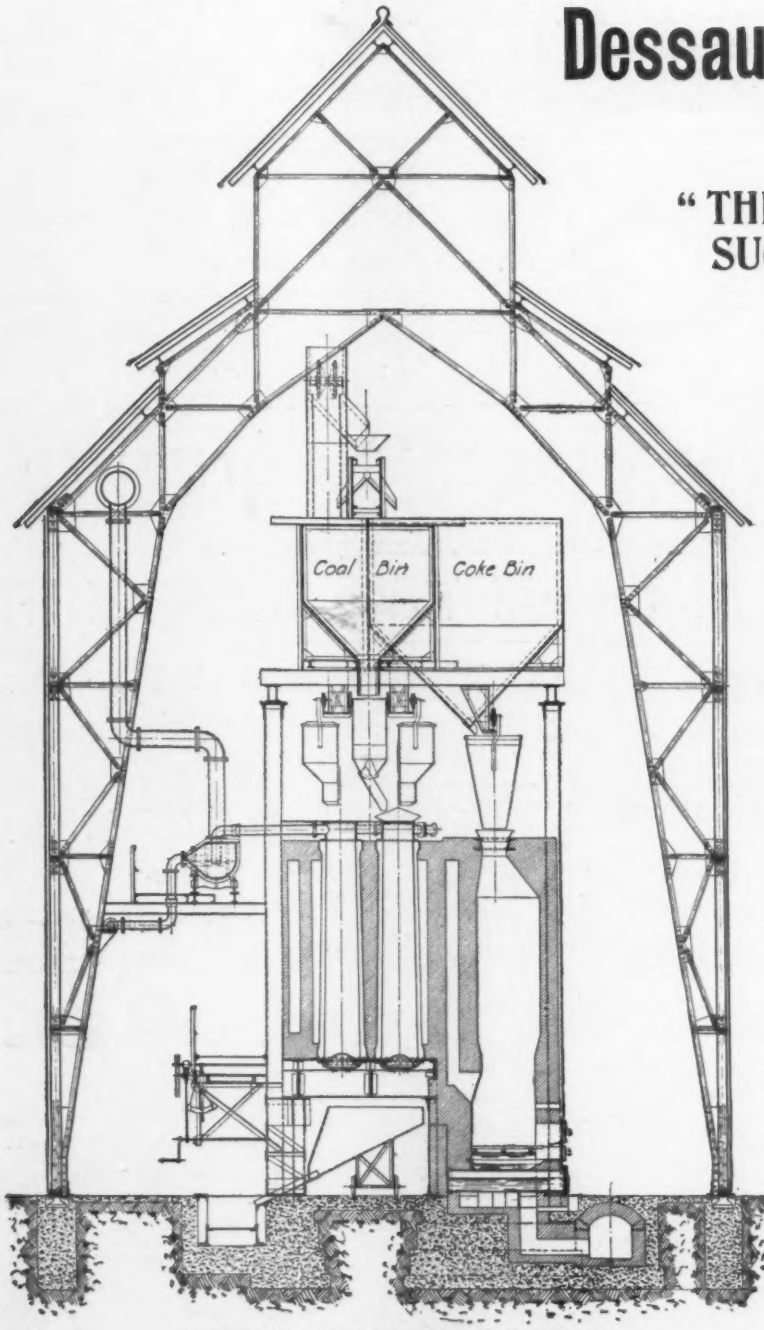


P. & A. TAR EXTRACTORS FOR COAL GAS OR WATER GAS.

THE GAS MACHINERY CO.
CLEVELAND, OHIO.

Dessau System of Vertical Retorts.

"THE ONLY SYSTEM IN SUCCESSFUL OPERATION."



Cross Section of Retort House for Vertical Benches.

Nineteen Installations with 126 Benches in operation.

ELEVEN Installations with **96** Benches in course of construction.

Maximum gas produced per man per 24 hours, 360,000 cu. ft.

Ten per cent. increase in yield of gas.

Forty per cent. increase in yield of ammonia.

Best quality of coke.

Least percentage of breeze.

Low fuel consumption.

Tar produced low in carbon.

Extreme low cost of retort house labor.

Minimum expense in wear and tear.

No Naphthaline.

No Cyanogen.

Present Producing Capacity, 25 Million Cu. Ft.

Within **90 days** the above producing capacity has been increased to **31 Million Cubic Feet** by additional orders for **39 benches** with **390 retorts.**

DIDIER-MARCH COMPANY,

FREDERICK J. MAYER, General Manager.

FACTORIES:
Keasbey, N. J.

Hudson Terminal Building, 50 Church St.,
New York City, N. Y.

PARKER-RUSSELL MINING AND MFG. CO.,

ST. LOUIS, MO.

NEW YORK OFFICE: 45 Broadway.

GAS RETORTS AND FIREBRICK.

Benches.—We erect GAS RETORT BENCHES with Horizontal retorts having closed ends, or Through retorts up to 20 feet in length.

Slopers.—Also, SLOPERS on improved lines for Inclined Retorts.

Stoking Machinery.—Sole Agents for U. S. and Canada for the Fiddes-Aldridge Simultaneous Discharging Charger. The "F.A.," or "One-Stroke" Machine. Cost of Carbonizing reduced to minimum. No Dust. Silent. No Waste of Coal. No Injury to Retorts.

Water Gas Linings.—We make a specialty of WATER GAS BLOCKS, and supply brick of superior grade for checkerwork.

Retort Houses and Conveying Machinery.—We also build Retort Houses, Coal and Coke Conveying Machinery. Plans, specifications and estimates cheerfully furnished.

CORRESPONDENCE SOLICITED.

ALL CONTRACTS MADE AS OF ST. LOUIS.

THE IMPROVED EQUIPMENT COMPANY OF NEW YORK — ENGINEERS DESIGNERS BUILDERS

NON-CLINKERING BENCHES

EQUIPPED WITH

"THE MOUTHPIECE THAT DON'T COME OFF."

PROPOSALS FURNISHED ON EVERY TYPE OF INSTALLATION.

TRY OUR LITTLE "3-HOUR SCURFER."

Write for our Bulletin No. 2.

THE IMPROVED EQUIPMENT COMPANY,

MAIN OFFICES: 60 WALL STREET, NEW YORK.

SOLE LICENSEES FOR THE DOHERTY BENCH FUEL ECONOMIZER.

SCIENTIFIC BOOKS.

CHEMISTRY OF GAS MANUFACTURE. By W. J. A. Butterfield. Vol. I., Material and Processes. $2.50. Vol. II., In Preparation.

DISTRIBUTION OF GAS. By Walter Hole, C.E. $5.

MODERN APPLIANCES IN GAS MANUFACTURE. By Fletcher W. Stevenson. $2.

MODERN GAS ENGINES AND PRODUCER GAS PLANTS. By R. E. Mathot. $2.50.

COAL TAR AND AMMONIA. By George Lunge. $15.

GAS ANALYSIS. By Dr. W. H. Birchmore. $1.25.

ELECTRIC GAS LIGHTING. By H. S. Norrie. 50 cents.

GAS ANALYST'S MANUAL. By J. Abady. $6.50.

GAS ENGINE DESIGN. By C. Edward Lucke, Ph.D. $3.

THE "GAS WORLD" YEAR BOOK, 1908. Edited by John Douglas. $3.

GAS AND GAS WORKS. By Hughes and O'Connor. $2.50

POOLE ON FUELS. By Herman Poole. $3.

GAS ENGINEER'S POCKET-BOOK. By Henry O'Connor $3.50.

GAS CONSUMER'S HANDYBOOK. By Wm. Richards. 20 cents.

PRACTICAL TREATISE ON HEAT. By Thomas Box. 2d edition. $5.

PRACTICAL PHOTOMETRY: A Guide to the Study of the Measurement of Light. By W. J. Dibdin. $3.

CHEMICAL TECHNOLOGY: Vol. I., *Fuel and Its Applications*, $5. Vol. II., *Lighting*, $4.

IRON WORK: Practical Designing of Structural Ironwork. By H. Adams. $3.50.

SELF-INSTRUCTION FOR STUDENTS IN GAS MANUFACTURE. Elementary, advanced and constructional, each, $1.50.

LIQUID FUEL FOR MECHANICAL AND INDUSTRIAL PURPOSES. By E. A. Brayley Hodgetts. $2.50.

COX'S GAS FLOW COMPUTER. High pressure $4.50.

GAS ENGINE. By F. R. Hutton, E.M., Ph.D., Sc.D. $5.

TECHNICAL GAS ANALYSIS. By Winkler & Lunge. $4.

CHEMISTRY OF GAS MANUFACTURE. By Harold M. Royle, F.C.S. $4.50.

HEMPEL'S GAS ANALYSIS. $2.25.

HANDBOOK FOR GAS ENGINEERS AND MANAGERS. Seventh edition. By Thomas Newbigging. $6.50.

GAS, GASOLINE AND OIL ENGINES. By Gardner D. Hiscox. Fifteenth edition. $2.50.

PRACTICAL HANDBOOK ON GAS ENGINES. By G. Lieckfeld. $1.

HEAT A MODE OF MOTION. By John Tyndall. $2.50.

THEORY OF HEAT. By J. Clerk-Maxwell. $1.50.

AMMONIA AND AMMONIUM COMPOUNDS. By Dr. R. Arnold. $2.

GASFITTERS' QUESTION BOOK, WITH ANSWERS. By Albert Dunbar, S.B. $1.00.

A TREATISE ON THE COMPARATIVE COMMERCIAL VALUES OF GAS COALS AND CANNELS. By D. A. Graham. $3.

A TEXT BOOK OF INORGANIC CHEMISTRY. By Prof. Victor Von Richter. $2.

ILLUMINATING AND HEATING GAS. By W. Burns. $1.50

HANDBOOK FOR MECHANICAL ENGINEERS. By H. Adams. $2.50.

FINANCES OF GAS, ELECTRIC LIGHT AND POWER ENTERPRISES. By Wm. D. Marks. $4.

THE "GAS WORLD" ANALYSES OF ACCOUNTS OF GAS UNDERTAKINGS FOR 1906-1907. $4.

STANDARD REDUCTION FACTORS FOR GASES. By Helon Brooks MacFarland. $1.50.

PRACTICAL PLUMBING. By P. J. Davies. Vol. I., $3. Vol. II., $4.50.

AMERICAN SANITARY PLUMBING. By James J. Lawler. $2.

HENLEY'S 20TH CENTURY BOOK OF RECIPES, FORMULAS AND PROCESSES. By Gardner D. Hiscox. $3.

FIELD'S ANALYSIS, 1907. $5.

TREATISE ON MASONRY CONSTRUCTION. Baker. $5.

AMERICAN GAS ENGINEERING PRACTICE. By M. Nisbet Latta. $4.50.

A COMPARISON BETWEEN THE ENGLISH AND FRENCH METHODS OF ASCERTAINING THE ILLUMINATING POWER OF COAL GAS. $1.60.

JONES JET PHOTOMETER, for Coal or Water Gas. Each $10.

ELECTRICITY.

ELECTRIC WIRING DIAGRAMS AND SWITCHBOARDS. By Newton Harrison, E.E. $1.50.

CARE AND MANAGEMENT OF ELECTRIC POWER PLANTS. By Norman H. Schneider. Cloth, $1.50. Leather, $2.50.

INDUSTRIAL PHOTOMETRY, with Special Application of Electric Lighting. By A. Palaz, Sc.D. $4.

ELEMENTS OF ELECTRIC LIGHTING, Including Electric Generation, Measurement, Storage and Distribution. By Philip Atkinson. $1.50.

ELECTRIC TRANSMISSION OF ENERGY. By G. Kapp. $3.50.

ELECTRICIAN'S POCKET-BOOK. By Monroe and Jamieson. $2.50.

DYNAMO BUILDING. By F. W. Walker. 50 cents.

DOMESTIC ELECTRICITY FOR AMATEURS. By E. Hospitalier. $2.50.

PRACTICAL MANAGEMENT OF DYNAMOS AND MOTORS. $1.

PRACTICAL GUIDE TO THE TESTING OF INSULATED WIRES AND CABLES. $1.

ELECTRIC LIGHTING, by Francis B. Crocker. $3.

ELECTRIC LIGHT FITTING. $2.

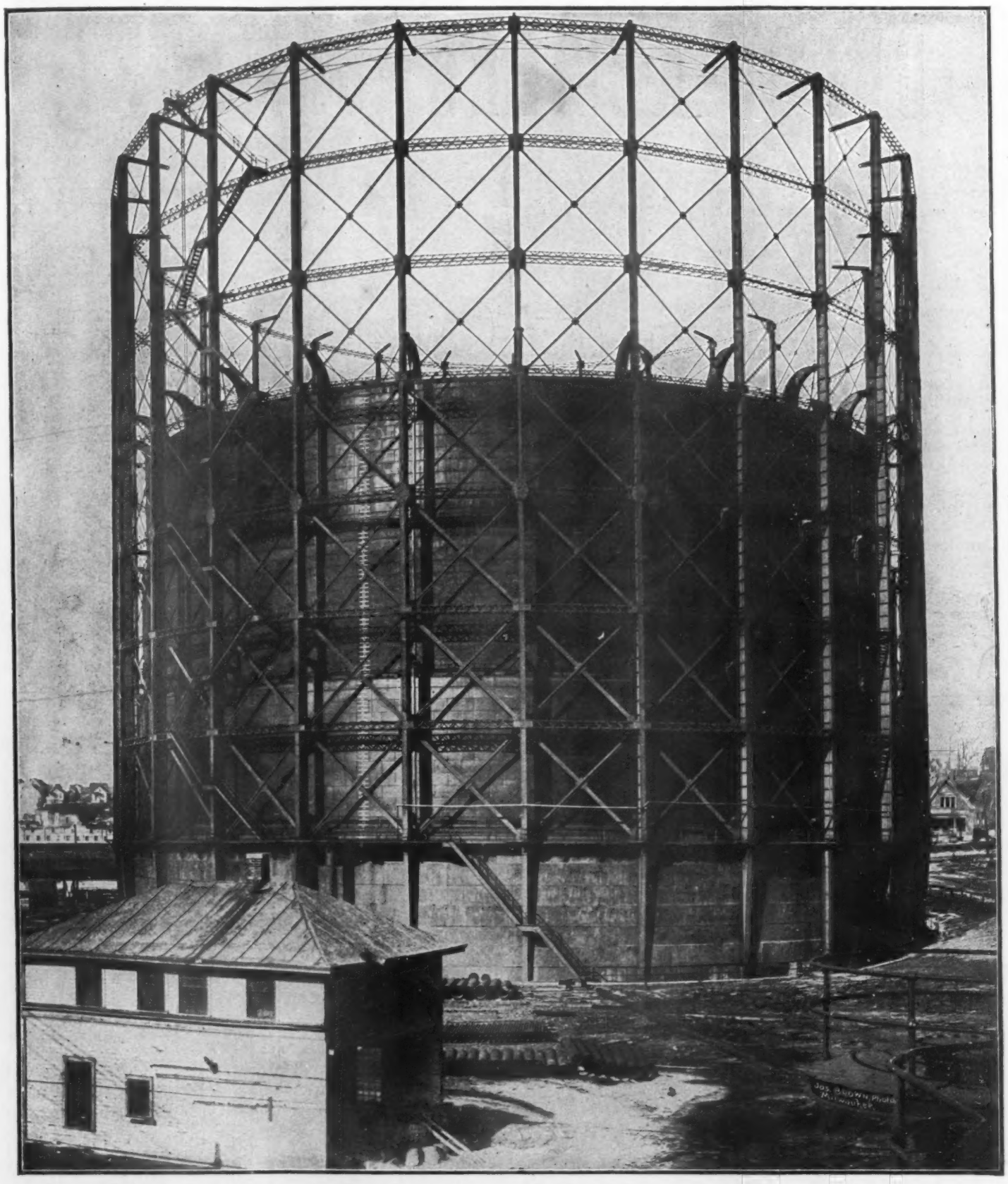
PRACTICAL ELECTRICITY. $2.50.

ELECTRICITY FOR ENGINEERS. $2.50.

ELECTRICITY, Its Theory, Sources and Applications. By John T. Sprague. $6

The above will be forwarded upon receipt of price. If sent by mail or express, postage or express charges must be added to above prices. We take especial pains in securing and forwarding any other Works that may be desired, upon receipt of order. All remittances should be made by check, draft, or post office money order. No books sent C.O.D.

A. M. CALLENDER & CO., - - - - - 42 Pine Street, New York City.



The Largest Steel Tank Gasholder in the World, 225 Feet 9 Inches Diameter, 35 Feet Deep, Five Lifts.

RITER-CONLEY MFG. CO.,

PITTSBURGH.

PLATE AND STRUCTURAL WORK OF EVERY DESCRIPTION.

COMPLETE COAL GAS PLANTS.

CRUSE-KEMPER COMPANY,

Gas Engineers and Builders.

GAS HOLDERS.

Western Sales Agent:
HENRY I. LEA, 616 The Rookery, Chicago, Ills.

Pacific Coast Agents:
HALLIDIE MACHINERY CO., Seattle, Wash.

MAIN OFFICE AND WORKS, - - - - AMBLER, PA.

J. S. DeHART, JR., PRESIDENT
A. F. WEHNER, SECRETARY
R. K. WEHNER, TREASURER

ISBELL-PORTER COMPANY

GAS ENGINEERS & BUILDERS OF GAS WORKS

BENCH WORK

CHARGING AND DISCHARGING MACHINERY

MACKENZIE EXHAUSTERS

PRIMARY AND SECONDARY CONDENSERS FOR FRESH OR SALT WATER

ISBELL VALVES SPECIALS

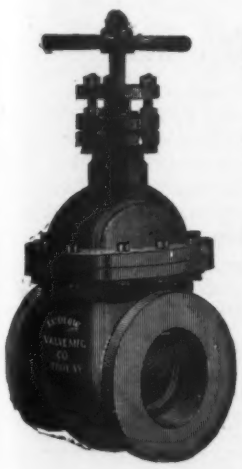
TAR EXTRACTORS

P.&A. TAR EXTRACTORS FOR WATER GAS

ROTARY AMMONIA SCRUBBERS

SHAVING SCRUBBERS PURIFIERS STREET GOVERNORS

MAIN OFFICE AND WORKS
BRIDGE & OGDEN STREETS
NEWARK, N.J.
ESTABLISHED 1865



THE

Ludlow Valve Mfg. Co.,

TROY, N. Y., U. S. A.

Double and Single Gate Valves, ¼" to 72",

—FOR—

Gas, Water, Steam, Oil, Ammonia, Etc.

HOT GAS VALVES A SPECIALTY.

Send for Catalogue.

QUINTARD IRON WORKS,

N. F. PALMER,

Foot of 12th St. & East River, New York,

MANUFACTURERS OF

GAS APPARATUS.

Complete Works Erected.

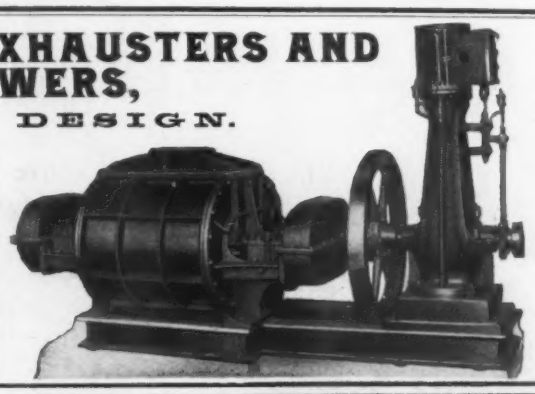
FREDERICK W. FLOYD, Engineer.

POSITIVE GAS EXHAUSTERS AND BLOWERS,

LATEST DESIGN.

Most Simple and Efficient Machine on the Market. Let us figure on YOUR requirements.

THE PIQUA BLOWER CO.,
PIQUA, OHIO.



ESTABLISHED 1856.

HENRY MAURER & SON,

Manufacturers of

High Grade Firebrick, Blocks, Tiles,

ETC.,

Works: Maurer, N. J. Office: 420 E. 23d St., N. Y. City.

FIELD'S ANALYSIS FOR THE YEAR 1907.

An Analysis of the Principal Gas Undertakings in England, Scotland and Ireland; being the 39th year of publication. Compiled and arranged by JOHN W. FIELD, Sec'y and Gen. Mgr. of The Gas Light and Coke Company, London. Price, $5. For Sale by

A. M. CALLENDER & CO., 42 Pine St., New York City.

THE BEST

GAS BENCHES.

"LACLEDE-CHRISTY."

BEST DESIGN,
BEST MATERIAL,
BEST WORKMANSHIP,
BEST RESULTS.

LACLEDE-CHRISTY CLAY PRODUCTS COMPANY,

ST. LOUIS, MO.

COAL TAR AND AMMONIA,

By GEORGE LUNGE, PH.D. Third and Enlarged Edition.
Price, $15. For Sale by
A. M. CALLENDER & CO., 42 Pine St., New York City.

LLOYD CONSTRUCTION COMPANY

GAS APPARATUS.

DETROIT – MICHIGAN

BEST IN THE WORLD.

Humphrey Instantaneous Bath Water Heaters

Should be used in every home. They make Hot Water **always** ready. Require no attention after installation. Hot water pours forth at any time upon lighting the gas. Close off the gas and all expense ceases. **Absolutely Guaranteed.**

Special Merits.

A burner that won't light back; a rust proof enameled shelf; a removable base plate for ready access to burner.

Shall we Send Catalog No. 9 and Discounts?

HUMPHREY CO.,
Kalamazoo, Mich., U. S. A.

WRITE for our Catalogue "O" just issued. This Catalogue deals entirely with "Brownhoist" Machinery as used at Artificial Gas Plants for handling coal, coke and other materials rapidly and economically.

THE BROWN HOISTING MACHINERY COMPANY,

Designers and Builders of All Kinds of Hoisting Machinery.

Main Office and Works:
CLEVELAND, O.

Branch Offices:
NEW YORK AND PITTSBURG.

Mueller Gas Union Meter Couplings and Soldering Nipples

Have uniform thickness of walls, each piece being carefully and accurately cored.

The threads of the coupling nuts are surrounded by ample metal to protect them.

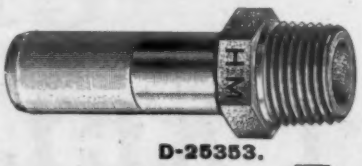
These goods are made from red brass and are Unconditionally Guaranteed.

TRADE MARK
MUELLER
REGISTERED

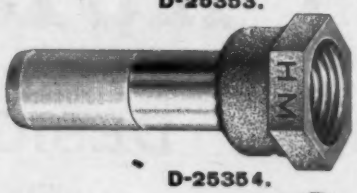
H. MUELLER MFG. CO.,

Works and General Offices,
DECATUR, ILL., U. S. A.
West Cerro Gordo St.

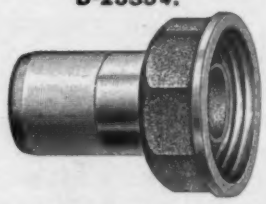
Eastern Division,
NEW YORK, N. Y., U. S. A.
254-258 Canal St. (cor. Lafayette).



D-25353.

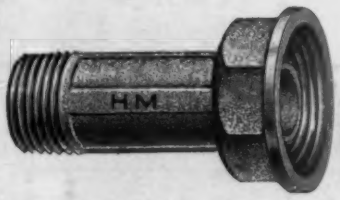


D-25354.



D-18800.

D-18802.



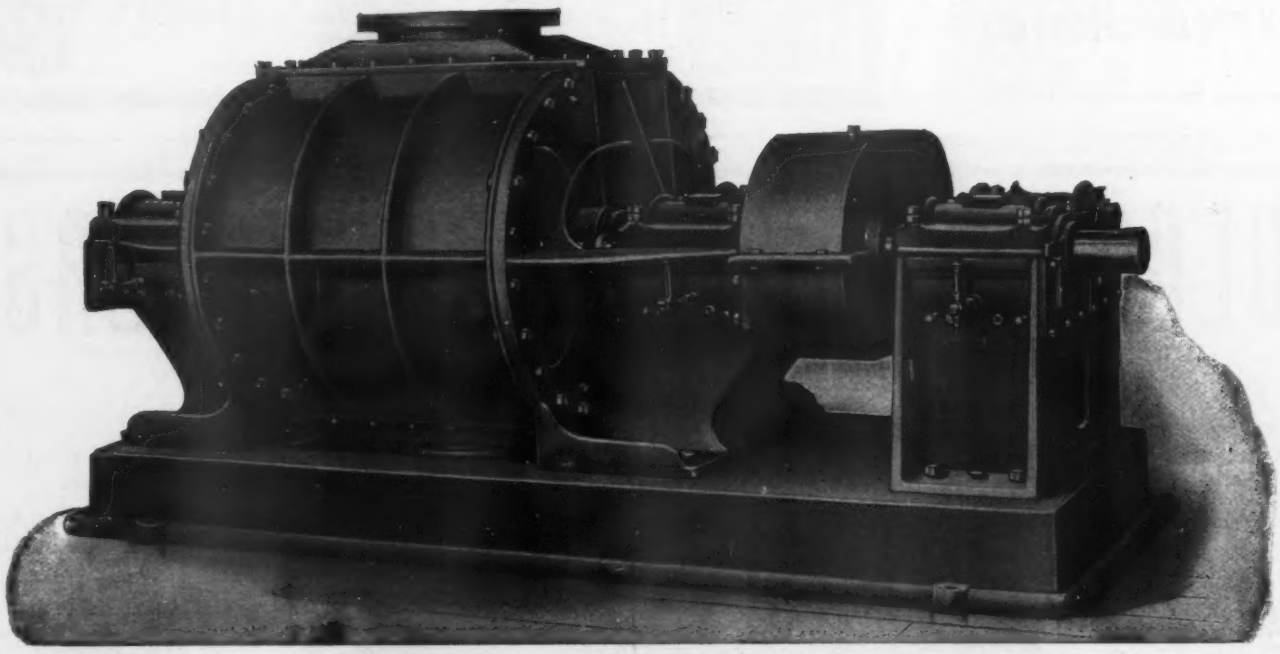
D-18801.

(Patent Applied for.)
D-18804.

D-18803.

ROOTS' EXHAUSTERS for HIGH and LOW PRESSURE WORK.

The highest efficiencies obtained. Most perfect devices for adjustment and maintenance of proper alignment. Use our flexible coupling to correct troubles caused by misalignment and engine shaft thrust. Our gas governor is the best. By-pass, gas valves and fittings.



P. H. & F. M. ROOTS COMPANY,

HOME OFFICE: Connersville, Ind. NEW YORK OFFICE: 120-122 Liberty St. CHICAGO OFFICE: 1547 Marquette Bldg.

NOW READY,

HUMPHREY INVERTED GAS ARCS.

5-Light Indoor Lamps.
3-Light Indoor Lamps.

Metal or Porcelain Enamel Finishes.

First shipments will be in small lots to enable all Gas Companies to obtain samples for test.

GENERAL GAS LIGHT CO.,
Kalamazoo, Mich.

NEW YORK: 46 West Broadway. SAN FRANCISCO: 718 Mission St.

GEORGE ORMROD Pres. & Treas. JOHN D. ORMROD, Supt.
J. G. EBERLEIN, Secretary.

EMAUS PIPE FOUNDRY.

DONALDSON IRON COMPANY. EMAUS, PA.

CAST IRON GAS & WATER PIPE

MANUFACTURERS OF

CAST IRON PIPE AND SPECIAL CASTINGS

FOR WATER AND GAS.

Also, FLANGE PIPE, LAMP POSTS, Etc.

THE BRISTOL CO.,

Manufacturers of BRISTOL'S

Recording Pressure Gauges, Recording Vacuum Gauges,
Recording Thermometers, Recording Voltmeters,
Recording Ammeters, Recording Wattmeters,
AND
THE WM. H. BRISTOL ELECTRIC PYROMETERS
AND
PATENT SMOKED CHART RECORDERS.

The BRISTOL COMPANY,
WATERBURY, CONN.
New York. BRANCH OFFICES. Chicago.

VULCAN ODORLESS GAS HEATERS,

For Artificial or Natural Gas.

Positively Odorless. We Guarantee this—Odorless.
These Heaters have been tested and endorsed by the leading Gas Experts and Chemists of this Country. Upon request we will send you booklet containing these endorsements.

The Perfect Gas Heater. Patent Applied For. The Cheerful Gas Heater.

No. 336. No. 330. No. 334. No. 330.—Showing Cone. No. 348.

Write us for prices and our new catalog.

W. M. CRANE COMPANY,

Do you use Bray Burners? 1131-1133 Broadway, New York.

STANDARD REDUCTION FACTORS FOR GASES,

A Number of Tables Necessary for the Reduction of the Volume of any Gas at any Temperature, Pressure and Degree of Saturation to its Equivalent Volume under Standard Conditions,

TOGETHER WITH

A Table for the Numerical Solution of Certain Exponential Equations,

By HELON BROOKS MacFARLAND, B.S., M.M.E.,

Associate Professor of Applied Mechanics, Department of Mechanical Engineering, Armour Institute of Technology, Chicago, Ills.

PRICE, $1.50. For Sale by

A. M. CALLENDER & CO., - - - - - 42 Pine Street, New York City.

AMERICAN METER CO.,

NEW YORK, ST. LOUIS, PHILADELPHIA, SAN FRANCISCO, CHICAGO,

Photometrical and Experimental Apparatus.

PUBLIC LIGHTING TABLE.

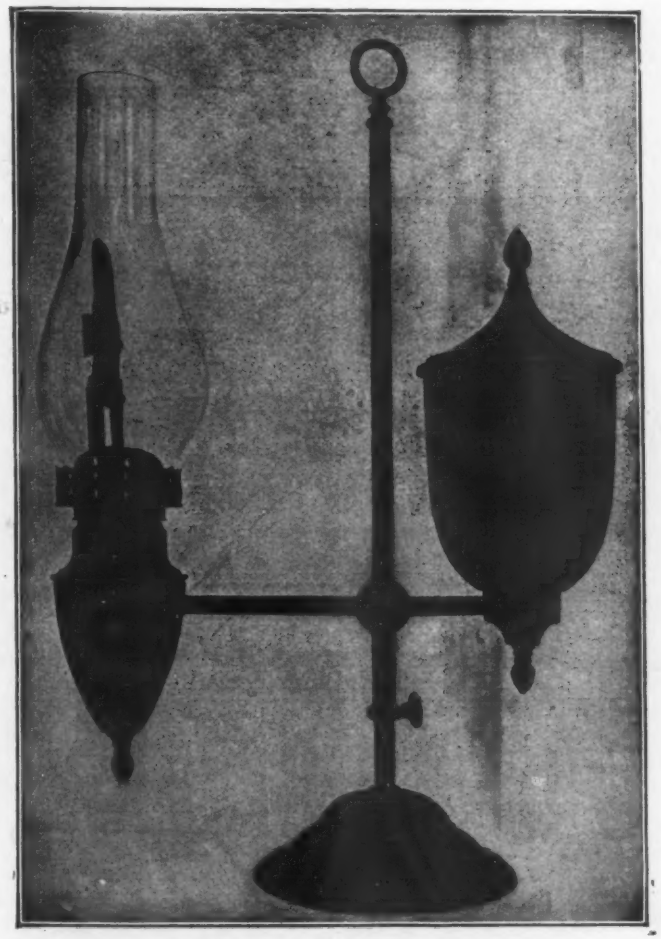
OCTOBER, 1908.

Day of Week.	Date.	Table No. 1. FOLLOWING THE MOON. Light.	Extinguish.
Thu.	1	8.30 PM	4.50 AM
Fri.	2	9.20 FQ	4.50
Sat.	3	10.20	4.50
Sun.	4	11.30	5.00
Mon.	5	12.40 AM	5.00
Tue.	6	2.00	5.00
Wed.	7	3.10	5.00
Thu.	8	No L.	No L.
Fri.	9	No L. FM	No L.
Sat.	10	No L.	No L.
Sun.	11	5.50 PM	7.50 PM
Mon.	12	5.50	8.30
Tue.	13	5.50	9.10
Wed.	14	5.50	9.50
Thu.	15	5.50	10.40
Fri.	16	5.50 LQ	11.40
Sat.	17	5.50	12.30 AM
Sun.	18	5.40	1.30
Mon.	19	5.40	2.30
Tue.	20	5.40	3.30
Wed.	21	5.40	5.20
Thu.	22	5.40	5.20
Fri.	23	5.40	5.20
Sat.	24	5.40 NM	5.20
Sun.	25	5.30	5.20
Mon.	26	5.30	5.20
Tue.	27	5.30	5.20
Wed.	28	5.30	5.20
Thu.	29	7.20	5.20
Fri.	30	8.10	5.20
Sat.	31	9.20	5.20

TOTAL HOURS DURING 1908.

By Table No. 1.

	Hrs.Min.
January	228.30
February	187.30
March	192.00
April	160.10
May	155.10
June	138.00
July	155.50
August	173.40
September	185.20
October	214.00
November	218.10
December	226.40
Total, yr.	2235.00



THE ELLIOTT KEROSENE STANDARD PHOTOMETER LAMP.

***

10-Candle Power.

***

This lamp is a perfect substitute for the 10-candle Pentane Lamp hitherto used, and has the following advantages:

1st. It uses Standard Kerosene Oil (Pratt's Astral Oil or equivalent).

2d. It is remarkably steady. Will burn 24 hours continuously with less than 2 per cent. variation.

3d. It is much less dangerous than Pentane, which is a kind of gasolene.

4th. It is not easily affected by air currents in the photometer room.

5th. Since the lamp may burn continuously, the candle power of gas may be taken at any moment, if necessary. This insures steady illuminating power without waste of carburetting material.

6th. The first cost of the lamp brings it within the reach of even small gas works.

7th. Costs much less to maintain than a Pentane lamp or sperm candles doing the same service.

8th. Is not affected by the weather.

PUBLIC LIGHTING TABLE.

OCTOBER, 1908.

Day of Week.	Date.	Table No. 2. NEW YORK CITY. ALL NIGHT LIGHTING. Complete Lighting in One Hour	Complete Extinguishing in 50 Minutes
		From Time Given	
		P. M.	A.M.
Thu.	1	5.22	4.42
Fri.	2	5.22	4.42
Sat.	3	5.22	4.42
Sun.	4	5.22	4.42
Mon.	5	5.22	4.42
Tue.	6	5.22	4.42
Wed.	7	5.22	4.42
Thu.	8	5.12	4.52
Fri.	9	5.12	4.52
Sat.	10	5.12	4.52
Sun.	11	5.12	4.52
Mon.	12	5.12	4.52
Tue.	13	5.07	4.52
Wed.	14	5.07	4.52
Thu.	15	4.57	5.02
Fri.	16	4.57	5.02
Sat.	17	4.57	5.02
Sun.	18	4.57	5.02
Mon.	19	4.57	5.02
Tue.	20	4.57	5.02
Wed.	21	4.57	5.02
Thu.	22	4.47	5.07
Fri	23	4.47	5.07
Sat.	24	4.47	5.07
Sun.	25	4.47	5.07
Mon.	26	4.47	5.07
Tue.	27	4.47	5.07
Wed.	28	4.47	5.07
Thu.	29	4.37	5.17
Fri.	30	4.37	5.17
Sat.	31	4.37	5.17

TOTAL HOURS DURING 1908.

	Hrs.Min.
January	481.50
February	329.15
March	351.50
April	341.50
May	233.05
June	218.10
July	282.55
August	254.55
September	292.25
October	420.45
November	374.30
December	411.05
	3992.35
Deduct on account of 50 min. extinguishing time	30.30
Total, yr.	3962.05

NEW YORK, 318 West 42d Street.
BOSTON, 820 Beacon Building.
PHILADELPHIA, Broad and Arch Streets.
ST. LOUIS, 712 Roe Building.
CHICAGO, 218 La Salle Street.
SAN FRANCISCO, 512 Oak Street.

WELSBACH STREET LIGHTING COMPANY

....OF AMERICA....

No. 36.

Controls and Operates the **Welsbach System of Street Lighting,**

Which includes its specially DESIGNED and PATENTED BURNER for PARK LIGHTING exclusively.

Uniformly SUCCESSFUL in 150 Cities and Towns.

By means of the Welsbach System of street lighting the superiority of GAS over electricity for street lighting has been fully demonstrated.

POINTS OF MERIT:

It is { Economical, Attractive, Successful, Up-to-date.

IT LIGHTS THE STREET.

Where there are no gas mains we can furnish an equally good light by our SELF-GENERATING NAPHTHA WELSBACH BURNER, and thereby supply a uniform light in all localities.

Correspondence Solicited from Gas Companies and Others interested in Municipal and Outside Lighting.

No. 38.

The Chic Light.

ONE OF THE MOST POPULAR AND BEST SELLERS OF THE WELSBACH LINE.

For decorative appearance and large volume of light at a popular price to the consumer,

THE CHIC LIGHT

is practically alone in the field. Complete satisfaction to the user is its strong point.

THE CHIC LIGHT—Design No. 71310.

PRICES:

Boxed complete, with No. 71 Welsbach burner, No. 310 F. Q. M. cylinder, No. 196 Junior J Brand Welsbach mantle, including the No. 316 opal shade, which will be packed separately.

Price, complete, clear cylinder, each, dozen lots, ... $1.35
Price, complete, clear cylinder, 100 lots, each, ... 1.25

When supplied with **No. 310 F. Q. M. Opal Cylinder** add 10 cents to above list.

Price of Shade No. 316.
Package Contains 16 Dozen.

Price, per dozen, ... $4.40
Price, original package, per dozen, . 4.00

WRITE FOR DISCOUNTS.

Welsbach Company,

FACTORIES:
Gloucester, N. J.
Chicago, Ills.

Salesrooms in all Leading Cities of the United States.

The United Gas Improvement Company,

Broad and Arch Streets, Philadelphia.

LESSEES, OPERATORS AND BUILDERS OF **GAS WORKS.**

Largest Builders of CARBURETTED WATER GAS PLANT IN AMERICA.

SOLE AMERICAN BUILDERS

OF THE

Standard Double-Superheater Lowe Water Gas Apparatus.

1907 CONTRACTS.

PARTIAL LIST OF PLACES:

Newburgh, N. Y.
Helena, Mont.
Bridgeport, Conn. (3d contract).
Suffolk, Va.
Winsted, Conn. (2d contract).
Nashua, N. H.
Augusta, Me. (2d contract).
Everett, Mass.
Jenkintown, Pa. (2d contract).
Coney Island, N. Y.
Mexico, Mo.
Jacksonville, Fla.
Syracuse, N. Y. (2d contract).
Atlanta, Ga. (2d contract).
Holyoke, Mass.
Peoria, Ills.
Schenectady, N. Y. (2d contract).
Danbury, Conn.
Galveston, Tex. (2d contract).
Quebec, Canada.
Indianapolis, Ind. (2d contract).
Bessemer, Ala.
Waterbury, Conn. (5th contract).
Sioux Falls, S. D. (3d contract).
Philadelphia, Pa.
New Hartford, Conn.
Poughkeepsie, N.Y. (2d contract).
Nashville, Tenn.
Salisbury, Md.
Norfolk, Va. (4th contract).
Wallingford, Conn.
Richmond, Va. (2d contract).
Oak Bluffs, Mass.
Arlington, Mass.

TOTAL SETS INSTALLED DURING YEAR, ... 43
TOTAL SETS INSTALLED TO DECEMBER 31, 1907, ... 677
TOTAL DAILY CAPACITY, TO DECEMBER 31, 1907, ... 545,865,000 cu. ft.

Tar Extractors for Carburetted Water Gas.
Photometrical Apparatus.
Gas Analysis Apparatus.
Recording Gauges.
Straight Standpipe System for Coal Gas Retorts.
Straight Standpipe Cleaners.
Waste Heat Boiler.
Hygrometer.
Venturi Meter for Measuring Flow of Air Blast.

Established 1858. Incorporated 1890.
CHAS. E. GREGORY, Prest. DAVID R. DALY, V.-Prest. & Treas.
H. D. ABERNETHY, Sec.

J. H. Gautier & Co.

Greene & Essex Streets,
Jersey City, N. J.

MANUFACTURERS OF

CLAY GAS RETORTS, FIRE CLAY TILES, FIRE BRICK and FIRE CLAY SPECIALTIES.

Ground Fire Clay, Fire Sand and Ground Fire Brick in Barrels and Bulk.

SOLE MANUFACTURERS OF THE

FLEMMING GENERATOR GAS FURNACE

ELECTRIC GAS LIGHTING.

How to install electric gas igniting apparatus, including the jump spark and multiple systems for use in houses, churches, theaters, halls, schools, stores or any large building. Also, the care and selection of suitable batteries, wiring and repairs.

By H. S. NORRIE.

Price, 50 cents. Orders may be sent to

A. M. CALLENDER & CO., 42 PINE ST., N. Y. CITY.

Practical Photometry,

By William Joseph Dibdin.

Price, - - - - $3.00.

FOR SALE BY

A. M. CALLENDER & CO.,
42 Pine St., New York City.

ESTABLISHED 1868.

L. N. RANCKE, Vice-Pres. & Mgr. F. SCHIAFFINO, Sec'y & Treas.

BALTIMORE RETORT & FIREBRICK CO.

BALTIMORE, MD.,

Manufacturers of all Material for the Construction of Coal Gas Benches.

HALF AND FULL DEPTH AND FREE FIRING BENCHES,

All styles of which we have in operation, equipped with the BEST of LATEST IMPROVEMENTS, proving our claim for SUPERIOR QUALITY and EFFICIENCY.

INCLINES—We have in SUCCESSFUL OPERATION benches of Inclined Retorts, MANUFACTURED and ERECTED by us.

WALDO BROS., 102 MILK ST., BOSTON, MASS.,
Agents for New England States.

LARGE FACILITIES—Correspondence Solicited.
RAIL and WATER CONNECTIONS to ALL POINTS.

L. C. HAMLINK, PRES. AUGUST COURT, SEC'Y.

GAS BENCH CONSTRUCTION COMPANY,

METROPOLITAN BUILDING, ST. LOUIS, MO.,

Engineers and Builders of all styles of Standard and Special Benches from one to twelve Retorts, Horizontal, Vertical, or Inclined.

We will guarantee "Better Benches," to be easier to control, make more gas per retort, and operate with less fuel than any bench on the market.

ALL WORKMANSHIP AND MATERIAL GUARANTEED.

JOHN DELL,
President and General Manager.

MISSOURI FIRE BRICK CO.,

ESTABLISHED 1882.

MANUFACTURERS OF

Gas Retorts, Bench Settings, Fire Brick, Cupola Linings, Etc.

We are the **Exclusive Agents** *for the* **Mitchell Patent Benches,** *Constructed with Half or Full Depth Furnaces, to Burn either Coal or Coke, and Arranged for Front or* **Rear Clinkering.** **The Mitchell** *is the* **Original Coal Firing Bench.** *We also Erect Plain Benches with* **One** *to* **Six Retorts.**

YOUR CORRESPONDENCE IS RESPECTFULLY SOLICITED.

City Office: *411 Olive Street, Continental Bank,* ST. LOUIS, MO.

PRACTICAL HANDBOOK ON GAS ENGINES, WITH INSTRUCTIONS FOR CARE AND WORKING OF THE SAME,

By G. LIECKFELD, C.E. Translated with Permission of the Author, by GEORGE M. RICHMOND, M.E. Price, $1.

For Sale by A. M. CALLENDER & CO., 42 Pine St., New York City.

Bronder Patent Stoking Machinery.

Three-Scoop and Three-Rake Charging and Discharging Machines are operating in New York, Newark, N. J., Philadelphia, Worcester, Mass., Mt. Vernon, N. Y., Toronto and Montreal, Canada, Detroit, Seattle, Rochester and St. Louis.

Four-Scoop and Four-Rake Charging and Discharging Machines are operating in Detroit, Mich., and Cincinnati, Ohio. These are the only machines that will draw or charge simultaneously 3 or 4 retorts (vertically) and handle from 42 to 60 retorts in from 25 to 30 minutes, lid opening and closing and filling of furnaces included.

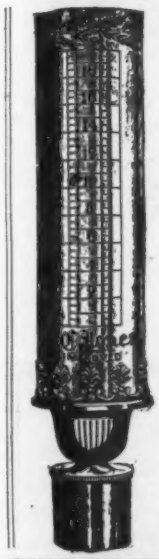
Hot **Coke Conveyor, Quencher and Steam Exhauster,** operating in Toronto, Canada, working in water-sealed flue, rollers being protected from heat and grit.

COAL CRUSHERS, CONVEYORS AND BINS. TURNTABLES FOR MACHINES.

Labor-Saving Machines for Handling Coal and Coke from Coal Cars to Coke Yard or Bins. Coke Screening and Measuring Plants a Specialty.

G. A. BRONDER,
Contracting Engineer and Builder,
229 BROADWAY, NEW YORK.

CONNELLY IRON SPONGE AND GOVERNOR CO.,



Automatic, Balance, High Pressure and Service Governors,

Unison Telemetric Pressure Gauge,

Iron Sponge, Purifying Material for Gas Purification, Manufacturers of Jones Jet Photometers, The National Smoke and Ammonia Helmet, Pressure Regulators, etc.

Wide Experience in High Pressure Installation and Extension.

50 CHURCH STREET, NEW YORK CITY.
295 WEST 22D STREET, CHICAGO, ILLS.

12-Inch High Pressure Governor.

REYNOLDS' GAS REGULATOR COMPANY,

ANDERSON, IND., U. S. A.

We make all sizes for all classes of reduction,

Double and Single District Stations,

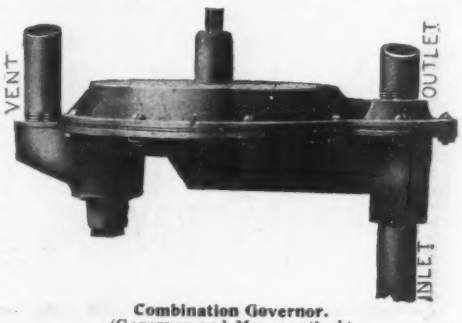
And Individual Service Governors for Reducing High Pressure.

HOLDER GOVERNORS

And Low Pressure Regulators, all of the Dry Diaphragm type.

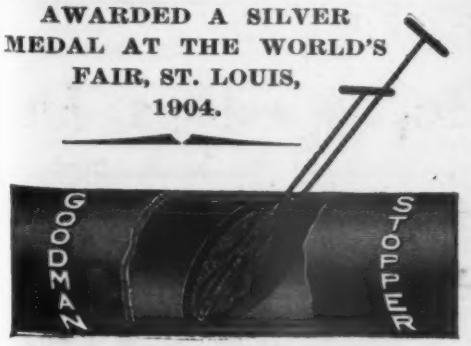
English Agents:
THE BRYAN DONKIN CO., LTD., Chesterfield, England.

Write for Catalog.



Combination Governor.
(Governor and Mercury Seal.)

AWARDED A SILVER MEDAL AT THE WORLD'S FAIR, ST. LOUIS, 1904.



SAFETY GAS MAIN STOPPER CO.,

257-263 East 133d Street,
NEW YORK CITY.

PATENTS, TRADE MARKS, COPYRIGHTS.

ROYAL E. BURNHAM,

Solicitor of Patents and Counsellor in Patent Causes.

833 Bond Building, Washington, D. C.

Send for Pamphlet on Patents.

JAMES D. PERKINS, President. F. SEAVERNS, Treasurer.

THE PERKINS COMPANY,

228 and 229 Produce Exchange, New York City.

OCEAN MINE YOUGHIOGHENY GAS COAL,
OLD KENTUCKY SHALE AND O. K. BOGHEAD.

BERWIND-WHITE COAL MINING COMPANY'S

Ocean Westmoreland Gas Coal.

Offices:
Washington Building, New York.
Betz Building, Philadelphia.

STRICTLY High Grade. . . . .
Carefully Prepared.
For Gas Making or
Heavy Steaming. .

A. C. M. AZOY, General Agent, 1 Broadway, New York.

NAPHTHALENE SOLVENT.

Cheap and Efficient.

For Use in Works, Mains and Service Pipes. Shipped in 100-gallon Drums.

Semet-Solvay Co.,
(P. O. Box 1)
SYRACUSE, N. Y.

JEFFREY

Coal and Ashes Handling Systems

for

Power Plants.

View of a

Jeffrey Telescoping

Ashes Elevator.

THE JEFFREY MFG. CO.,
COLUMBUS, OHIO, U. S. A.
New York. Chicago. Boston. Pittsburgh. Denver. Charleston. Knoxville. St. Louis. Montreal.

ISAAC C. BAXTER, President. ESTABLISHED 1864. PETER YOUNG, Secretary and Treasurer.

Works, LOCKPORT STATION, PA.

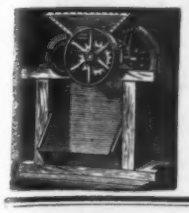
JAMES GARDNER, JR., CO.,

Address all communications to JAMES GARDNER, JR., CO., Bolivar, Pa.

Successor to WILLIAM GARDNER & SON.

Fire Clay Goods for Gas Works.

GAS ANALYST'S MANUAL. By JAQUES ABADY. Price, $6.50. For Sale by A. M. Callender & Co., 42 Pine St., N. Y. City.



KELLER ADJUSTABLE COKE CRUSHER.

Strong, Simple, Durable. Will Crush any Size Desired.

C. M. KELLER,
Sec. & Supt. Gas Lt. & Coke Co.,
Columbus, Ind.
Correspondence Solicited.

THE ECONOMICAL GAS APPARATUS CONSTRUCTION COMPANY, LIMITED,

Consulting Engineers.

Builders of UP-TO-DATE Machinery and Appliances for Coal and Water Gas Plants. :: :: :: :: ::

PLANS,
SPECIFICATIONS
AND ESTIMATES
PREPARED.

AMERICAN OFFICE:
269 Front St., East, Toronto, Canada.

JOHN CABOT, President. GEO. D. CABOT, Secretary.

TRAYS FOR Cabot Mfg Company GAS WORKS.

1412-1428 Adams Street, Hoboken, N. J.

PURIFIER AND SCRUBBER TRAYS.

Church's Patent Trays,

Reversible; Strongest; Most Easily Repaired.

We also Supply the Cheapest and Strongest

Reversible Bolted Trays.

Special Trays for Iron Oxide in Either Style.

EDMUND H. McCULLOUGH, President. H. C. ADAMS, Vice-President. CHAS. F. GODSHALL, Treasurer. HENRY WHARTON, Secretary. C. B. NICHOLS, Assistant Secretary.

THE WESTMORELAND COAL CO.

Chartered 1854.

Mines situated on the Pennsylvania and the Baltimore and Ohio Railroads, in Westmoreland County, Pa.

POINTS OF SHIPMENT:

PHILADELPHIA, BALTIMORE, SOUTH AMBOY, N. J.,
WATKINS (SENECA LAKE), N. Y.

Since the commencement of operations by this Company its well-known Coal has been largely used by the Gas Companies of New England and the Middle States, and its character is established as having no superior in gas-giving qualities, and in freedom from sulphur and other impurities.

Principal Office, 224 South 3d St., Phila., Pa.

GAS MAINS—SERVICE PIPES.

Their installation for High or Low Pressure is the work in which we have specialized for years. Because of our Facilities and Experience, many Gas Companies prefer to contract with us for such work, rather than to execute it themselves. It proves to be as cheap in the end. We solicit inquiries. SULLIVAN BROS.,

Telephone Connection. 11 Main St., Flushing, N. Y.

GAS TAPPING MACHINES

—FOR—

Drilling and Tapping Pipe under Pressure

WITHOUT ANY ESCAPE OF GAS.

They are Strong and Compact.

Size of Combination Drills and Taps ¾ to 4-inch.

Machines Sent to any Gas Company for Thirty Days' Trial.

Send for Circulars.

Geo. Light,
DAYTON, O.

Modern Machine Shop Construction, Equipment and Management, by OSCAR E. PERRIGO, M.E.

Price, $5. For Sale by

A. M. CALLENDER & CO., 42 Pine St., New York City.

Alcohol, its Manufacture from Farm Products and De-Naturing. By F. B. WRIGHT.

Price, $1. *For Sale by*

A. M. Callender & Co., 42 Pine St., New York City.

Gas Engineer's Pocket-book, HENRY O'CONNOR.

Comprising Tables, Notes and Memoranda relating to the Manufacture, Distribution and Use of Coal Gas, and the Construction of Gas Works. PRICE, $3.50. For Sale by

A. M. Callender & Co., 42 Pine St., New York City.

Standard Oil Company,

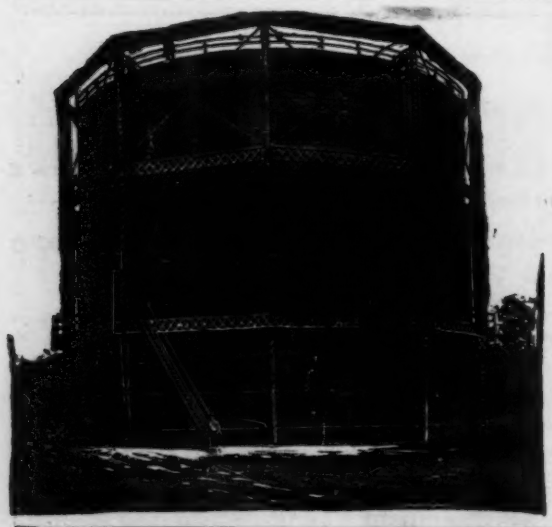
GAS NAPTHA DEPARTMENT.

GAS NAPTHA.

GAS OIL.

Correspondence Solicited

26 Broadway, New York City.



DAVIS & FARNUM MFG. CO.,

Principal Office and Works, Waltham, Mass.

Single, Double and Triple-Lift Gasholders of any Capacity. Tubular, Pipe and Sinuous Friction Condensers of all Sizes.

Steel Tanks for Gasholders, Iron Roof Frames and Floors, Purifying Boxes, Center Seal or Valve Connections, Bench Work, Reversible Lime Trays.

Self-Sealing and Pressed Steel Mouthpiece Lids.

Coke Barrows, Coal Wagons, and all Apparatus Requisite for a Complete Gas Works.

Also, Gas and Water Pipe, Flanged Pipe, Sugar House Work, and Special Castings of all Descriptions.

H. M. BYLLESBY & COMPANY

(INCORPORATED).

GAS ENGINEERS,

DESIGN, CONSTRUCT AND OPERATE COMPLETE COAL, WATER AND CRUDE OIL GAS PLANTS.

EXAMINATIONS AND REPORTS.

AMERICAN TRUST BUILDING
CHICAGO.

Oklahoma City, Okla. Mobile, Ala. San Diego, Cal.

ALEX. C. HUMPHREYS, M.E., M. Inst. C.E. ARTHUR G. GLASGOW, M E., M. Inst. C.E.

HUMPHREYS & GLASGOW,

CONSULTING ENGINEERS.

CITY INVESTING BUILDING
165 Broadway
New York.

38 VICTORIA STREET,
London, S. W.,
England.

ADVICE AS TO EXTENSION AND RECONSTRUCTION OF GAS AND ELECTRICITY PLANT.

COMPLETE EXAMINATIONS MADE.

PROPERTIES PURCHASED.

No. 0670. DISCHARGING THE QUENCHED COKE INTO BINS. CLEVELAND GAS LIGHT COMPANY.

Coal and Coke Handling Machinery for Gas Works,

Including

Coke Larries, "Industrial" Railways,
Hoisting Towers, Cable Railways,
Elevators, Automatic Railways.

This type of machinery is a specialty with us and we want you to write and let us tell what it will do for you and what we can save you. Experience extending over 36 years is bound to be useful.

C. W. HUNT COMPANY

(Established 1872).

West New Brighton, Staten Island, N. Y.
New York City Office, 45 Broadway.

"THE MINER"

Globe Street and Boulevard Lamps.

Cheapest and Best

THOUSANDS IN USE WITH INCANDESCENT BURNERS.

Send for Catalogues.

THOMAS T. W. MINER,

821-823 Eagle Av., N.Y.

Practical Handbook on

GAS ENGINES,

With Instructions for Care and Working of the Same,

By G. LIECKFELD, C.E.
Translated with Permission of the Author.
By GEO. M. RICHMOND, M.E.

Price, $1.

For Sale by
A. M. CALLENDER & CO.,
42 Pine Street, - - - - New York City.

SELF-INSTRUCTION

For Students in Gas Manufacture.

ELEMENTARY, ADVANCED AND CONSTRUCTIONAL.

Three Volumes. Price, $1.50 each. For Sale by
A. M. Callender & Co.,
42 Pine Street, New York City.

Bartlett, Hayward & Company,

Baltimore, Md. 100 Broadway, New York.

GASHOLDERS,

Coal and Water Gas Plants.

KERR MURRAY MANUFACTURING COMPANY,

Engineers and Manufacturers

APPARATUS FOR COAL GAS PLANTS,

SINGLE AND DOUBLE-LIFT GASHOLDERS
AND STEEL TANKS,

Latest Improved

ROTARY EXHAUSTERS, P. & A. TAR EXTRACTORS, AMMONIA WASHERS,

CONDENSING, SCRUBBING AND PURIFYING APPARATUS.

Street Specials and Valves.

ADDRESS:

KERR MURRAY MANUFACTURING COMPANY, FORT WAYNE, IND

R. D. WOOD & CO.,

400 CHESTNUT ST., PHILADELPHIA,

MANUFACTURERS OF

Cast Iron Pipe.

HEAVY LOAM CASTINGS,

Dunham Specials,

Hydraulic Work,

LAMP POSTS, VALVES, ETC.,

Gas Power Plants with Producers.

BUILDERS OF

Gasholders.

Single or Multiple Lifts, with or without Metal Tanks.

PURIFIERS, CONDENSERS, SCRUBBERS, BENCH WORK.

Cutler's Patent Freezing Preventer for Holder Cups.

Double Gate Valves.

A LARGE STOCK ON HAND READY FOR PROMPT SHIPMENT.

These valves are provided with double discs or gates, and are tight with the gas pressure on either side of them.

The discs are so arranged as to be free from their seats when being opened or closed, and are operated by a quick-acting mechanism. The valve stem extends outside of the bonnet, and serves as an index, showing whether the valve is closed or open, and the amount of opening. They are made of the following dimensions:

Size.....	8 inches	10 inches	12 inches	16 inches	20 inches	24 inches	30 inches	36 inches
Diameter of flanges....	13 inches	16 inches	18 inches	22½ inches	27 inches	31 inches	31½ inches	44 inches
Face to face of flange...	12 inches	12 inches	12 inches	14 inches	17 inches	20 inches	21 inches	23¾ inches

For price and other information, apply to

THE CONTINENTAL IRON WORKS,

P. O. STATION G. NEW YORK (BOROUGH OF BROOKLYN).

FRANK D. MOSES,

Telephone, 1503-D TRENTON, N. J., Telephone, 1503-D

Constructing Engineer and Contractor.

Estimates Furnished on any kind of Work in Connection with Gas or Water Plants.

SPECIAL ATTENTION GIVEN TO THE REMODELLING AND EXTENDING OF THE PROPERTIES OF WORKS NOT UP-TO-DATE.

CORRESPONDENCE SOLICITED.

GEROULD'S IMPROVED RETORT CEMENT.

A Cement of great value for patching retorts, putting on mouthpieces, making up all bench-work joints, lining blast furnaces and cupolas. This cement is mixed ready for use. Economic and thorough in its work. Fully warranted to stick.

Price List, f.o.b. PITTSBURGH, PA.

In Casks, 400 to 800 pounds, at 5 cents per pound.
In Kegs, 100 to 200 " " 6 " "
In Kegs less than 100 " " 7 " "

C. L. GEROULD,

1200 Bank for Savings Bldg., Pittsburgh, Pa.

PRACTICAL PHOTOMETRY,

By WILLIAM JOSEPH DIBDIN.

PRICE, $3. FOR SALE BY

A. M. CALLENDER & CO., 42 Pine Street, New York City.

Established 1851. Incorporated 1880.

THE STACEY MANUFACTURING CO.,

Gas Engineers and Builders.

Gas Holders.

All Ironwork and Apparatus Required in a Gas Plant Valves and Specials.

CINCINNATI.

WESTERN OFFICE:
718 Mission St., San Francisco. **Correspondence Solicited.**

THE FULTON GAS PRESSURE GOVERNORS

For Artificial or Natural Gas.
For District or Individual Service.

Our Improved **Duplex Sensitive Governor** for district service will reduce high pressure gas to inches of water without variation. Absolutely safe and reliable. No complicated mechanism to get out of order. No auxiliary regulators or other devices to assist the main governor required. The most simple and perfect governor ever placed on the market. We also manufacture Holder Governors, Compressor Governors and Individual Service Governors for any inlet and outlet pressure.

More than 20 years' experience with the largest gas companies. Send for Catalog.

THE CHAPLIN-FULTON MFG. CO.,
28-34 PENN AVE., PITTSBURGH, PA.

ALCOHOL, Its Manufacture from Farm Products and De-Naturing,

By F. B. WRIGHT.

A NEW AMERICAN BOOK.

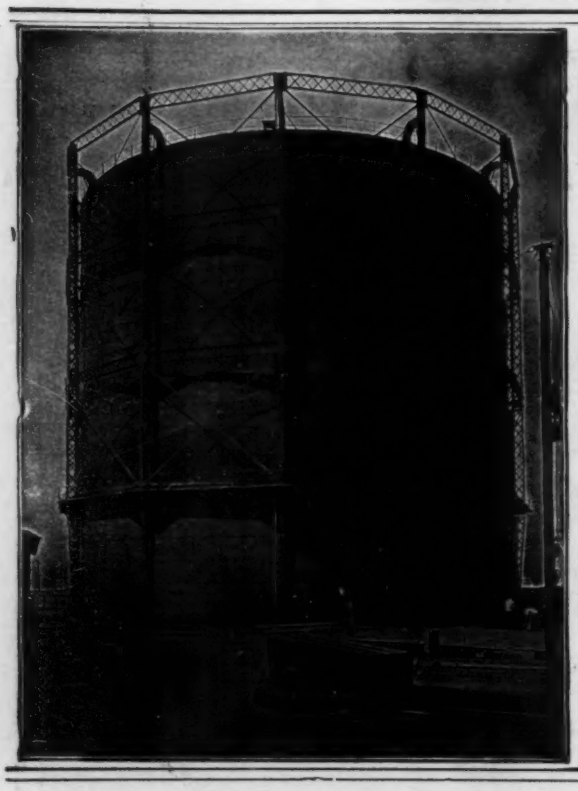
CONTENTS.

Chapter 1. Alcohol, its various forms and sources.
" 2. Mashing, cooling and fermentation in general.
" 3. Distillation, simple forms of stills, the production of Alcohol from wine.
" 4. Malting.
" 5. Alcohol from Potatoes, mashing, fermentation, distillations, Continuous stills.
Chapter 6. Alcohol from Grain.
" 7. Alcohol from Beets.
" 8. Alcohol from Sorghum and Molasses.
" 9. De-natured Alcohol and its Commercial uses.
" 10. Alcoholometry. Index.

Fully Illustrated with Original Drawings of Necessary Apparatus.

PRICE, $1. For Sale by

A. M. CALLENDER & CO., 42 PINE ST., NEW YORK CITY.



JOHN FOWLER, President. J. SCOTT FOWLER, Vice-Pres. & Treas.

DEILY & FOWLER MFG. CO.,

39 Laurel Street, Philadelphia, Pa.

ESTABLISHED, 1842. INCORPORATED 1908.

BUILDERS OF

GASHOLDERS,

Single-Lift or Telescopic,

With or Without Steel Tanks.

Oil Storage Tanks, Water Tanks, Etc.

ESTIMATES CHEERFULLY FURNISHED.

CORRESPONDENCE SOLICITED.

The order for this Triple-LIFT Holder and Steel Tank was received by the Logan Iron Works from the Union Gas Light Company, of East New York. The contract was completed and the Holder was in actual use in 90 days from receipt of order. Capacity of Holder, 500,000 cu. ft.

LOGAN IRON WORKS,

Brooklyn, N. Y.,

MANUFACTURERS OF

Single or Multiple-Lift

GASHOLDERS,

Complete, with Steel Tanks.

BENCHES, SCRUBBERS,

CONDENSERS,

PURIFIERS, IRON ROOFS,

AND ALL PARTS OF

GAS WORKS APPARATUS.

Contractors for

Complete Works.

FREDERIC EGNER,

Gas Engineer,

NORFOLK, VA.,

May be consulted with reference to estimates of cost for new, or appraising actual value of existing works; utility of proposed or patented processes; relative earning power to capitalization, and management.

GAS ANALYST'S MANUAL,

By JAQUES ABADY, M. Inst. Mech. E.

(Incorporating F. W. Hartley's "Gas Analyst's Manual" and "Gas Measurement.")

Ninety-three Illustrations and Nine Folding Plates. Bound in Handsome Half Leather. Price, $6.50.

For Sale by A. M. CALLENDER & Co., 42 Pine St., New York City.

D. McDONALD & CO.,

971-997 BROADWAY, ALBANY, N. Y.,

MANUFACTURERS OF

DRY GAS METERS, STATION METERS, PREPAYMENT METERS, METER PROVERS AND GAUGES.

THE GLOVER PREPAYMENT METER,

Simple, Strong, Satisfactory.

THE HINMAN STATION METER DRUM,

The greatest advance that has been made in 20 years in the ACCURATE and ECONOMICAL measurement of gas in large quantities. :: :: ::

NEW YORK OFFICE: 561 West 47th Street. | ALBANY OFFICE: 991 Broadway. | CHICAGO OFFICE: Jefferson and Monroe Streets

"IRONCLAD"

Dry Gas Meters

For Natural or Artificial Gas.

While the mechanism is fundamentally the same as in the regular tin gas meter, the "Ironclad" method of communicating motion to the slide valves is entirely new and cannot be used by other makers.

The slide valve and valve seats are uncovered, allowing easy access; also eliminating the center stuffing box necessary in tin meters.

Both valve seats are cast in one piece and attached to meter case, assuring absolute and permanent alignment of valve seats and valves.

Pittsburg Meter Company

East Pittsburg, Pa.

New York Office, 149 Broadway.

BINDER

FOR THE

JOURNAL.

PRICE, $1.

FOR SALE BY

A. M. CALLENDER & CO., - 42 Pine St., New York.

NATHANIEL TUFTS METER COMPANY,

455 Commercial St., Boston, Mass.

PREPAYMENT GAS METERS,
WET AND DRY GAS METERS, STATION METERS, ETC.

REPAIRING OF ALL MAKES OF METERS, AND FITTED WITH OUR PREPAYMENT ATTACHMENT.

B

METERS.

INCREASED CAPACITY.
INCREASED EFFICIENCY.

PREPAYMENT METERS, STATION METERS, METER PROVERS, ETC.

PROMPT AND CAREFUL ATTENTION TO ALL REPAIR WORK.

MARYLAND METER COMPANY,

BALTIMORE.—CHICAGO.

YOU NEED ONE OR MORE OF OUR COMPLAINT METERS.

METERS, Plain and Prepayment,

For Artificial or Natural Gas.

Repairing All Makes and Attachments Added if Desired.

SPECIAL METERS FOR ACETYLENE.

KEYSTONE METER COMPANY,

ROYERSFORD, PA.

JUDICIOUS ECONOMY IS EFFECTED

BY USING

5-L. IMPROVED GAS METERS.

LOW SPEED, LARGE DIAPHRAGMS,
STRONGER CONSTRUCTION.
LARGER CAPACITY.

FITTED WITH

THE NEW YORK PREPAYMENT ATTACHMENT.
STEEL BOX AND CABINET LOCK. :: :: ::

NEW YORK IMPROVED METER CO., 306-310 East 47th St., New York City.

AMERICAN METER CO.,

NEW YORK, ST. LOUIS, PHILADELPHIA, SAN FRANCISCO, CHICAGO,

Wet and Dry Gas Meters, Station Meters, Meter Provers,
Photometrical Apparatus, Gauges,

PREPAYMENT METERS,

REGULAR METERS REFITTED WITH PREPAYMENT ATTACHMENTS.

HELME & McILHENNY,

Established 1848. **1339 to 1349 Cherry Street, Philadelphia, Pa.**

MANUFACTURERS OF

Wet and Dry Gas Meters, Station Meters, Provers, Gauges, Etc.

METERS REPAIRED

PREPAYMENT GAS METERS.

Our Own Patents. Strong. Simple. PROMPT ATTENTION. CORRESPONDENCE SOLICITED.

HOW'S YOUR METER'S LUNGS?

INLET AT TOP.

PATENTED MAY 13, 1902.

Diaphragms are to meters what lungs are to men. Condensation is to a diaphragm what Tuberculosis is to the lungs. The worse the disease the sooner the finish. The functions of both are destroyed eventually. One may never be replaced, the other, the diaphragm, may be, but at considerable cost. The way to avoid this is to use a

"SELF-DRAINING METER,"

Guaranteed free of Repairs for two years. Condensation never reaches diaphragm, insuring longer life.

ALWAYS ACCURATE.

Low speed. Extra Heavy Tin Used. Thoroughly Seasoned Diaphragm.

SAVES OVER 75 PER CENT. IN ANNUAL COST REPAIRS.

LARGEST CAPACITY of any METER MADE.

Write me for price, particulars, or to call.

E. W. BROWN, Sole Agent,

229 to 269 Chestnut Street, Brooklyn, N. Y.

INLET AT BOTTOM.

PATENTED MAY 13, 1902.

METRIC METAL COMPANY,

MAKERS OF

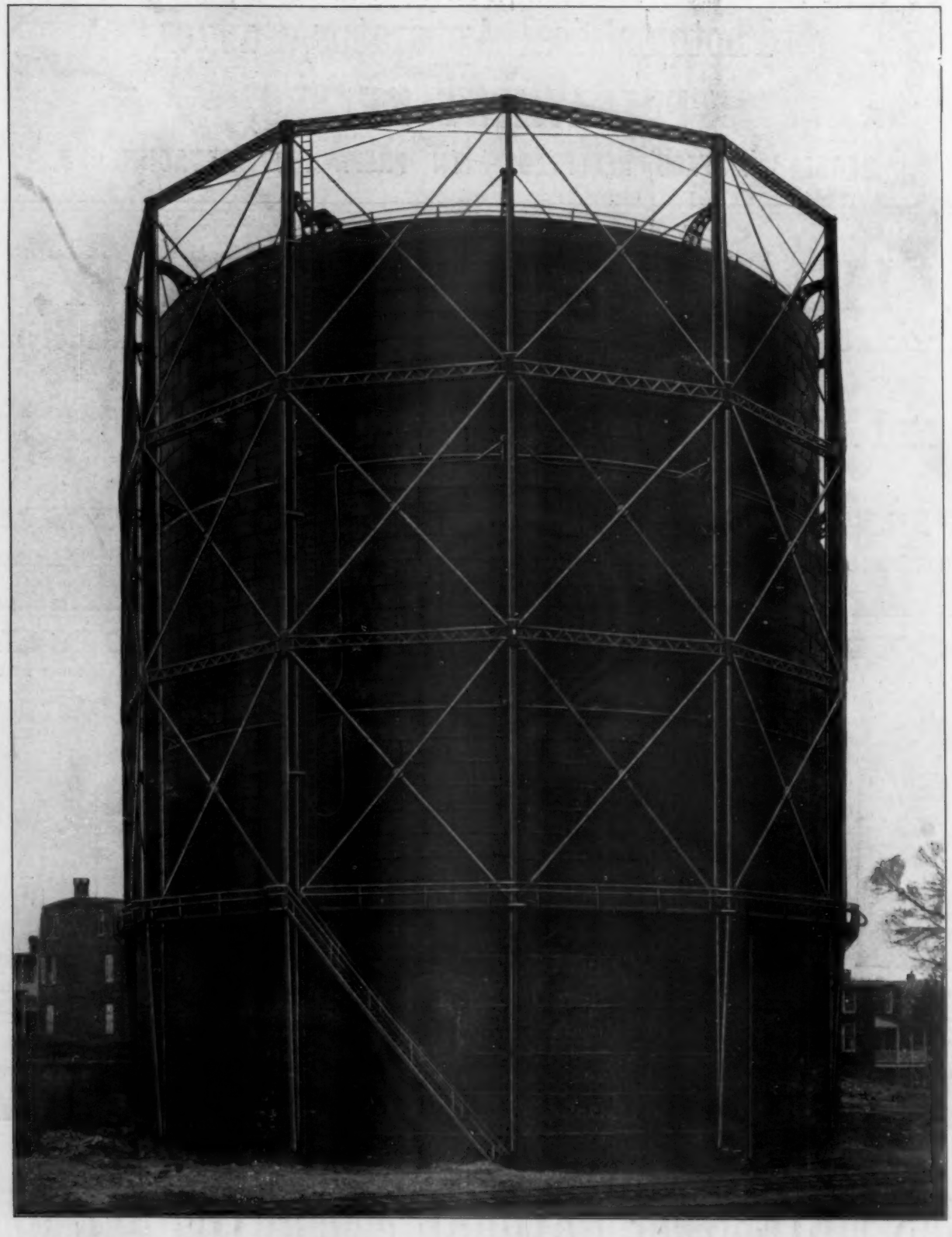
GAS METERS for NATURAL and ARTIFICIAL GAS.

Special Attention given to Repairing METERS of all Makes.

FACTORY AT ERIE, PA.

750,000 CUBIC FEET CAPACITY 3-LIFT STEEL TANK GASHOLDER.

READY FOR USE IN 92 WORKING DAYS AFTER COMPLETION OF FOUNDATION.



The Western Gas Construction Company,

FORT WAYNE, IND.